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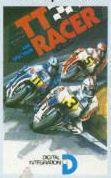

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Commodore Horizons, c/o Business Press International, 205 East 42nd Street, New York, NY 10017.

Subscriptions
UK £10.00 for 12 issues, overseas surface (excluding US and Canada) £16.00 for 12 issues, US and Canada airlifted US$33.95 for 12 issues.

ABC

Submitting articles
Commodore Horizons welcomes readers' contributions — either articles or program listings. Articles should be typed double-spaced with a wide margin. Programs should, whenever possible, be printed out on plain white paper, accompanied by a cassette. We cannot guarantee to return every article or program submitted, so please keep a copy. If you want to have your program returned you must include an s.a.e.

SUNSHINE

Commodore Horizons is published monthly by Sunshine Books, Scot Press Ltd. Typeset by In-Step Ltd, 33-41 Dallington Street, London EC1. Printed by Riverside Press Ltd, Thanet Way, Whitstable, Kent. Distributed by SM Distribution, 16-18 Trinity Gardens, London SW9 (telephone 01-274 8611, telex 261643). ISSN 0265-4164. Registered at the Post Office as a newspaper.

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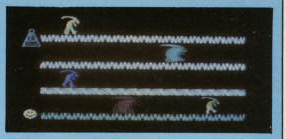

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EDITORIAL

NEW MACHINES ALWAYS make their manufacturers nervous. A company may not fold just because its new micro is a spectacular flop, but its image will be dented and it will have to write off an enormous amount of effort, research and capital. A succession of costly flops and the company will fold.

The rewards of launching a successful machine, however, are self-evident. Quite apart from the immediate financial returns, there are numerous advantages in establishing a wide user base and fostering brand awareness. A successful micro may not be a licence to print money, but it comes close.

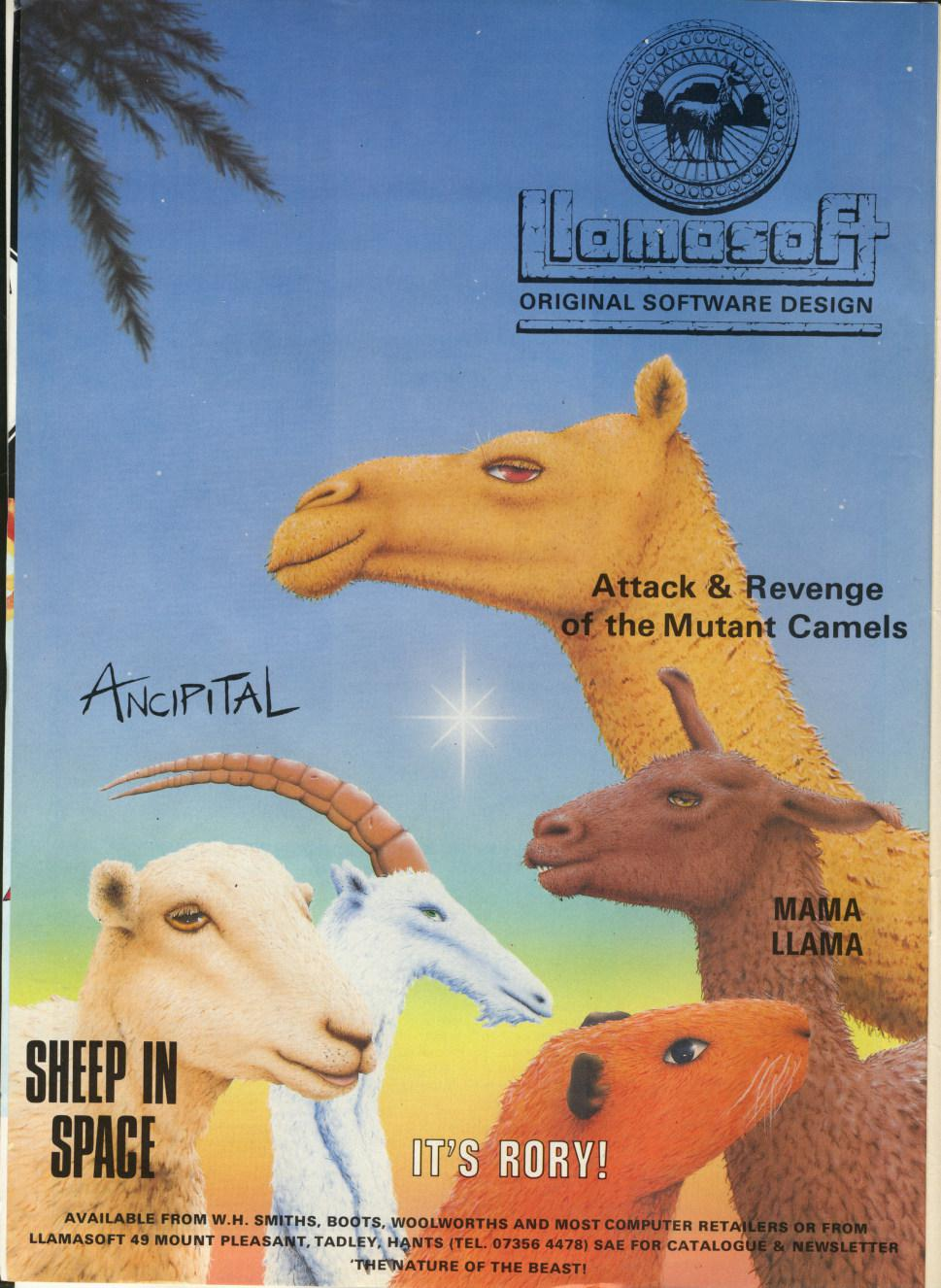
The C16 and the Plus/4 have only been on the market for a few months, so it is perhaps a little premature to make any final judgements. Nevertheless, it is possible to draw some conclusions now.

Neither machine is a smash-hit, though the C16 appears to be selling quite nicely. The Plus/4, for all its built-in software, appears to be falling on stoney ground. At the risk of seeming facetious, the minuses are outweighing the pluses.

This does not mean that either machine is doomed to an early scrap heap. The Commodore 64 was not an instant success when it was first launched in the UK. It only took off when Commodore reduced its price.

It is interesting to note that Commodore appears to be considering the idea of constructing an adaptor which would make the Plus/4 compatible with the 64. This would allow it to run software written for the 64, thus making it instantly more attractive to both software companies and users.

However, with 16 and 32 bit machines already hovering on the horizon, neither the C16 nor the Plus/4 are likely to have extended selling lives. If these machines are going to be successful, they will have to take off soon. Judgement may be suspended for the moment, but the day of reckoning is not that far off.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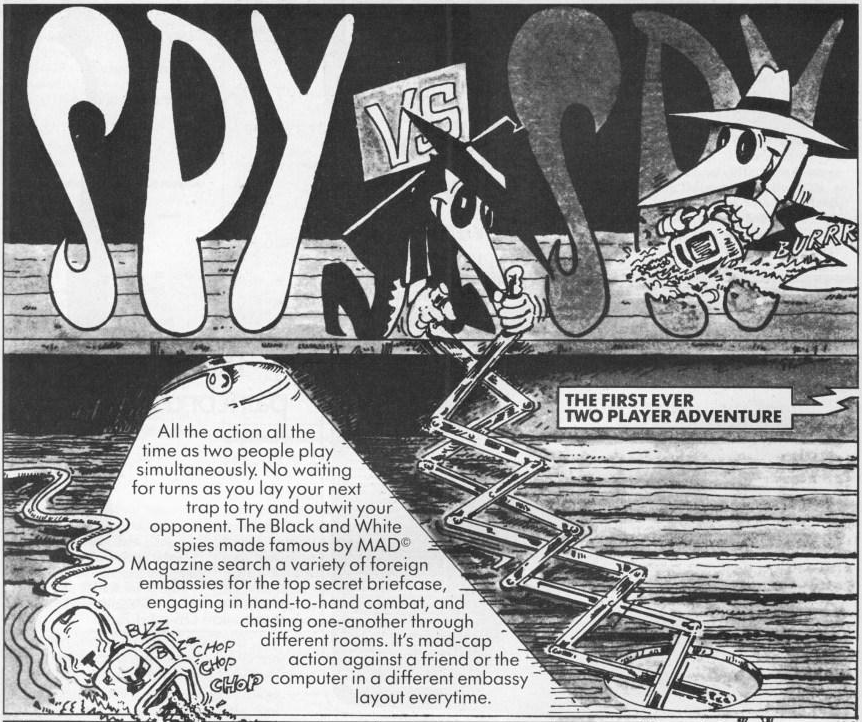

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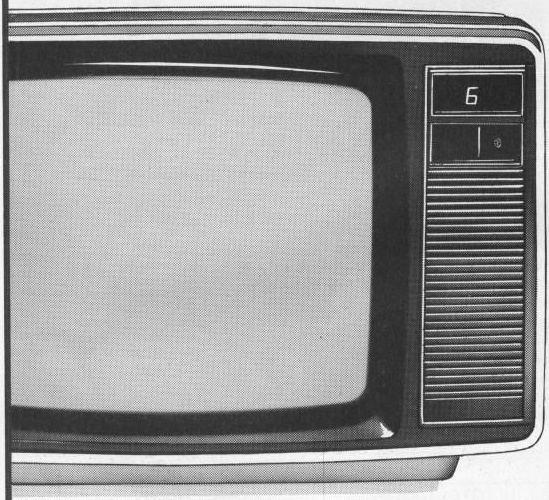

This is a piece of paper.

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All it takes to see it is a little imagination. And an exciting new software program from CBS called 'Pixstik'.

The 'Pixstik' program instantly turns your TV into a blank piece of paper. Point the 'Pixstik' light pen at the screen and, quicker than you can say 'Vincent Van Gogh', you're an electronic artist.

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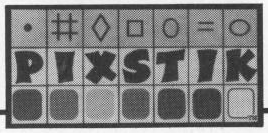

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The Software Sales Service. Tel: 01-636 6433/4. CBS Computer Software, Ashbrook House, 3-5 Rathbone Place, London W1.

LETTERS PAGE

Terminal tips

HERE ARE a few more useful system codes for anyone who has Terminal's Super Gridder game.

When the game has loaded press RUN/STOP-RESTORE then type:
SYS4619 — makes the grid invisible.
SYS4719 — to give infinite lives.
S Dale
Handforth
Cheshire

We goofed — twice

IN THE December issue you printed a program called Space Mines. I typed the listing in and checked and amended minor errors. When I ran the game everything was OK until I pressed a key to start, and all that came on to the screen was "BREAK IN 7010". Could you please tell me what was wrong with the program?
Nigel Ogley
Halifax
W Yorks

YES — WE goofed! Space Mines is in two parts, and we only printed the first part, which gives the instructions for the game but not the game itself. You'll find the second half of Space Mines in this issue.

Whilst on the subject of goofs, the listing for Steve Lee's Rat Whack in the same issue used non-standard graphic characters. If you're having problems, replace the solid square, short dash triangle and diamond with appropriate cursor symbols; and the other graphics with colour control symbols. You should then be able to whack as many rats as you like without difficulty.

```
CSR UPS ♦♦♦♦

CSR DOWNS ■■■■

CSR LEFTS ----

CSR RIGHTS ▼▼▼▼

HOME ↑     CLR ♣

COLOURS

BLK ♥      ORN £
WHT ■      BRN ┐
RED ◣      RDZ ├
CYN ┼      GY1 ┤
PUR │      GY2 ┬
GRN ◤      GNZ └
BLU ♠      BLZ ┘
YEL ┴      GY3
```

Vic 20 forever

I HAVE bought every issue of your magazine since it started last year. I own a Vic 20 and have been very disappointed with November's issue since there is hardly anything for the Vic; there was only one game to type in, and that needed the Super Expander. Software reviews for the Vic were also scarce. I've always liked your magazine until now, so please have more for the Vic.
John Marrs
Northampton

EVEN THOUGH the Vic has now been discontinued, so long as there is a demand for articles and a supply of new software from manufacturers, we will continue to support it, along with the 64, C16 and Plus/4. You'll notice that there are several new Vic games reviewed in the Soft Hits section, and we'll continue to publish readers' listings as long as you continue sending them in.

Vic 20 — never

WITH THE demise of the Vic 20 there may be a number of your readers who are considering the 64 as a replacement. Let me sound a note of caution.

My original configuration was the Vic 20, 1515 printer, Datasette and 1540 disk drive. On enquiry with my supplier I was assured they were all compatible with the 64. The supplier gave me a weird "OPEN" command to use with the 1540 which was confirmed by CBM Corby. Needless to say it did not work. Further enquiry to CBM gave me a couple of POKEs which appeared to work until I attempted to load a database program. Yet another enquiry gave me the information that the POKEs would not work if there were any LOAD/SAVEs in the program, and the only way to ensure success was to change a chip in the 1540.

I loaded the 64 Tape Computing magazine cassette from the Datasette and got a 60% LOAD ERROR response. A friend loaned me his C2N and everything was perfect. This means I've spent £22.42 for a chip and £39.95 for a C2N.

So, when a supplier tells you that peripherals are 64 compatible — they're not.
C K R Harris
Fareham
Hants

LET'S JUST clear a few points up. There's no functional difference between the Datasette and the C2N, so the problems with Mr. Harris' unit were probably caused by misaligned heads or whatever. The 1540 and 1541 are, however, different, and the modification mentioned would be necessary to use the 1540 satisfactorily with the 64.

The moral of the tale is that suppliers can be more interested in shifting products than in checking their facts. Always see the product working before handing over the cash.

This is the chance to air your views — send your tips, complaints and compliments to Letters Page, Commodore Horizons, 12-13 Little Newport Street, London WC2R 3LD

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SPACE
56K FINKERTON MANUAL
CHEESEBURGER N. MURRAY!

NEWS DESK

Tynesoft promises C16 games

SOFTWARE for the new Commodore 16 and Plus/4, impossible to obtain at the time of writing, may soon be available from at least one major software company. Tynesoft has plans for a Christmas release of a starter pack of four C16 games, Shootit, Climbit, Munchit and Hoppit, at £14.95.

The four games are variants of well-known arcade games, and have been produced in co-operation with Commodore UK.

Tynesoft spokesman Colin Courtney said "The C16 is doing well locally, and we have plans for several more games. Despite the small memory we've been able to design North Sea Oil Rig Disaster, which has eight scrolling screens, and we're now working on Olympiad". Oil Rig Disaster features several rigs connected by pipelines, and a helicopter which has to avoid flames to land divers who can repair the damaged pipelines. Olympiad is a variation of the popular Olympic Games theme.

Tynesoft's latest releases for the 64 include Superfile, a budget database on cassette at £9.95 or disk at £12.95. Utility programs for the Plus/4 are also on the way.

For more details contact Tynesoft, Addison Industrial Estate, Blaydon-upon-Tyne, Tyne & Wear, 091-414-4611.

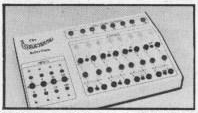
Commodore quizzes schools

COMMODORE is to sponsor the 1985 British Computer Society Schools' Computer Quiz. Sponsorship amounts to £50,000, including £12,000 of prizes for schools.

In parallel to the quiz, Commodore is running a special loans and sponsorship scheme. Every school taking part in the quiz willl be offered the loan of two complete Commodore 64 systems for three months. If at the end of the period the school wants to keep the eqipment, Commodore will add £3 to every £7 the school raises in payment.

For further details of the quiz, contact Mrs Sharon Abouzahrah at The British Computer Society, 13 Mansfield Street, London W1M 0BP, 01-637 0471.

Have a Banana

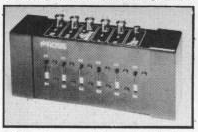


THE ODDLY-NAMED Banana Interface enables the 64 or Vic 20 to control DC motors, stepper motors and relays. It has 54 four millimetre banana sockets on its panel, including eight relay outputs, eight 12-volt logic signal outputs, and eight inputs. Special attention has been paid to ruggedness of construction and safety of use, and the Banana is recommended for use in educational establishments (and, presumably, zoos).

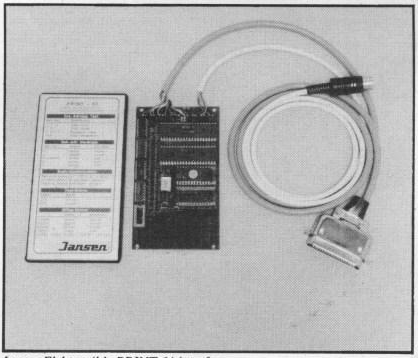
Software and hardware for specific experimental uses is promised, and the Banana is available direct from the manufacturers. Contact Castle Associates on 0723-584250 for more details.

Ross in control

ROSS ELECTRONICS' RF-170 television control centre enables you to interconnect a TV, computer, videorecorder, video game, cable TV or additional VTR dubbing and monitoring units without complicated wiring. Measuring 205 x 90 x 65 mm, the RF-170 has one phono input and five coaxial, which may be freely interconnected through a bank of six slide switches. The unit costs around £30 and is available from specialist audiovisual dealers or from Ross Electronics, 49/53 Pancras Road, London NW1 2QB.



West German printer link



Jansen-Elektronik's PRINT-64 interface

JANSEN-ELEKTRONIK has announced an intelligent multi-function Centronics printer interface to connect the 64 to devices such as the Epson FX-80 or Star.

PRINT-64 can dump hi-res pictures in shades of grey, and can cope with user-defined graphics and all Commodore PET graphics. The interface comes with a tutorial program on disk, though this is not necessary for normal operation. Fourteen secondary addresses for print commands are also supported.

The interface's price is to be held at £69.95 until January 31st 1985.

Contact Jansen-Elektronik, Unter Olback 1, 5090 Leverkusen 31, West Germany.

Slomo cuts the pace of micros

CAMBRIDGE Computing's Slomo is now available for the 64 or Vic 20. This unique device consists of a cartridge port connector with a short length of cable, connected to a control box with two buttons and a knob. The internal circuitry introduces an unmaskable interrupt into the computer's operating system, with the result that the action of any program, in Basic or machine code, can be slowed down or frozen.

Apart from making it easier to defeat difficult arcade games, Cambridge Computing suggests that software houses might find the device useful in the production of screen shots. The Slomo is guaranteed not to damage the computer, and can be left connected at all times.

Cost is £14.95, through retail outlets or direct from Cambridge Computing, 61 Ditton Walk, Cambridge CB5 8QZ, 0223-214451.

Spectrum emulator imminent

WHITBY COMPUTERS' ZX Spectrum emulator software, just announced at £14.95, is designed to allow Sinclair Spectrum Basic programs to run on the Commodore 64.

Several months ago one company's claim to have produced a Spectrum emulator which could cope with machine code proved to be without foundation. Whitby Computers, a company best known for custom-designed Basic extension packages for the 64, has now released the Simulator package, which adds the commands from Sinclair Basic to the 64. Whitby claims that most Spectrum listings can now be typed into the 64, while the use of 64 Basic is unaffected.

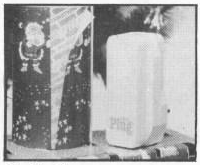
Whitby suggests the Simulator as an ideal method for Spectrum owners who wish to upgrade to the 64 to retain Basic programs, at the same time adding many of the functions of Sinclair's £50 Interface 1, which has an RS232 port, and giving the new owner the use of the 64's quality keyboard, disk handling and serial port facilities.

We'll review the Whitby Computers ZX Spectrum Simulator as soon as possible. Meanwhile contact Whitby at 7, Chubb Hill Road, Whitby, N. Yorks, 0947-604966.

Pulling the plug on mains noise

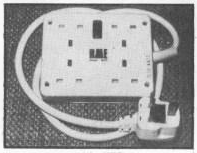
COMPUTER USERS plagued by mains surges (causing computer crashes when the fridge switches itself on) will be pleased to know that two new products aim to solve the problem.

The first, from Power International, is The Plug, costing £17.95. It's a 13 amp device which is simply fitted to your computer mains cable, and goes into a conventional wall socket. The internal circuitry consists of a transient suppressor and an RFI filter, which effectively eliminate "spikes" in the power supply. Contact Power International, 2A Isambard Brunel Road, Portsmouth, 0705-756715.



PI's The Plug

For users with more equipment to protect, the Power Bloc from Rayman Electronics is a four-socket unit with a 130 Joule spike suppression rating. It features a main neon, extension cable and ABS plastic case, and costs around £30. Contact Rayman Electronics, 12 King Edward Street, Shirebrook, Mansfield, 0623-748129 for more details.



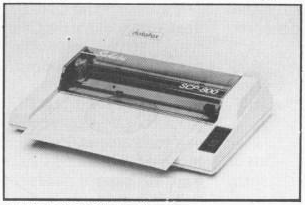
Rayman's Power Bloc

Printing and plotting on a budget

BASINGSTOKE-based Datafax, distributor of products from Japanese giants Sakata Shokai, has announced the SCP-800 four-colour printer-plotter, which retails at under £200.

Apart from handling A4 paper, the SCP-800 has a 210 mm paper roll option. Printing speed is six or 12 cps depending on character size. Interface options include Centronics eight bit parallel, serial, or RS232C with an adaptor.

For more information, contact Datafax at Datafax House, Bounty Road, Basingstoke, Hants, RG21 3BZ, 0256-464187.



Datafax's SCP-800 machine

Penman's Robot Plotter

At the same time the Penman Robot Plotter, a three-colour device related to the turtle, has been announced. The Penman consists of an interface unit and a free-moving drawing head connected by a ribbon cable.

At £249, the Penman is cheaper than many printer/plotters, and is not limited in the size of paper it can use since it does not have a work surface — it can be operated on an ordinary table. Connection to the micro is by RS232 interface, and Commodore 64 software is in preparation. Contact Penman Products Ltd, 8 Hazelwood Close, Dominion Way, Worthing, W. Sussex, BN14 8NP, 0903-209081.

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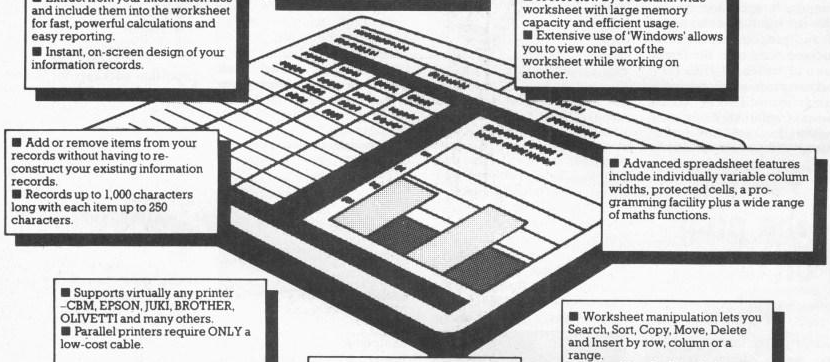

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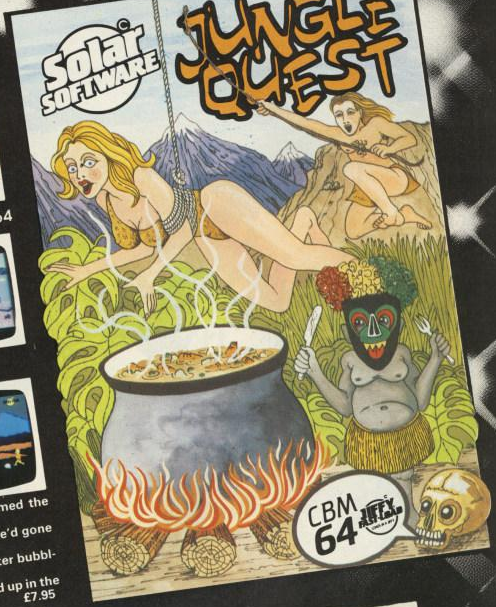

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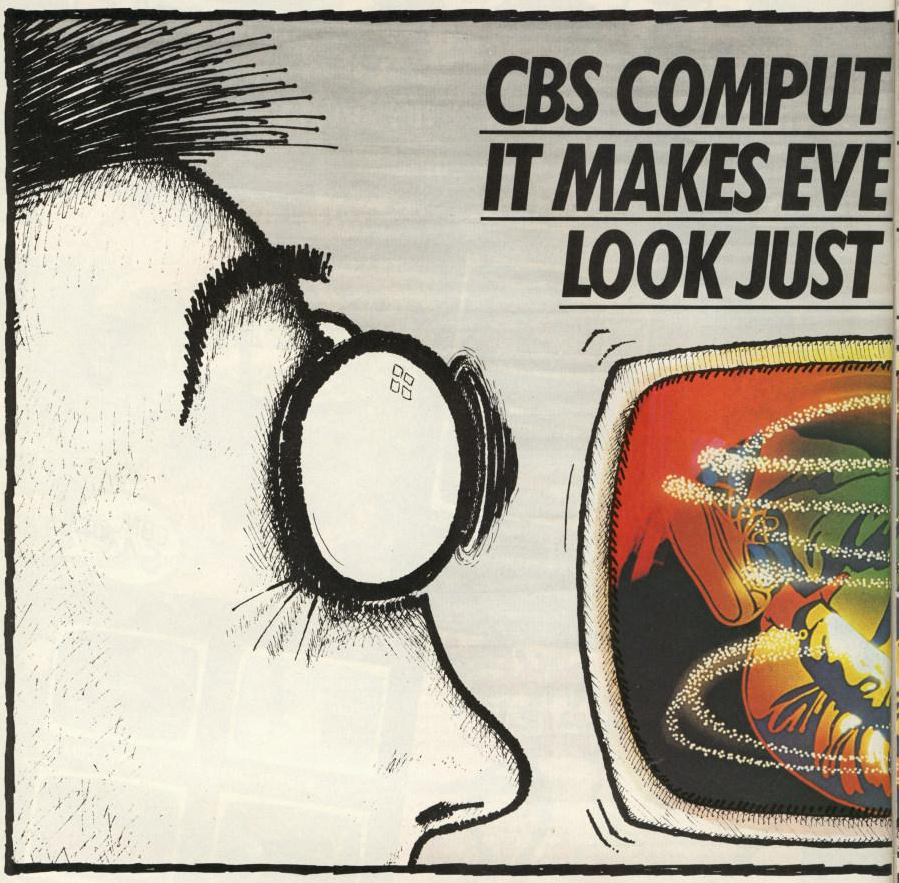

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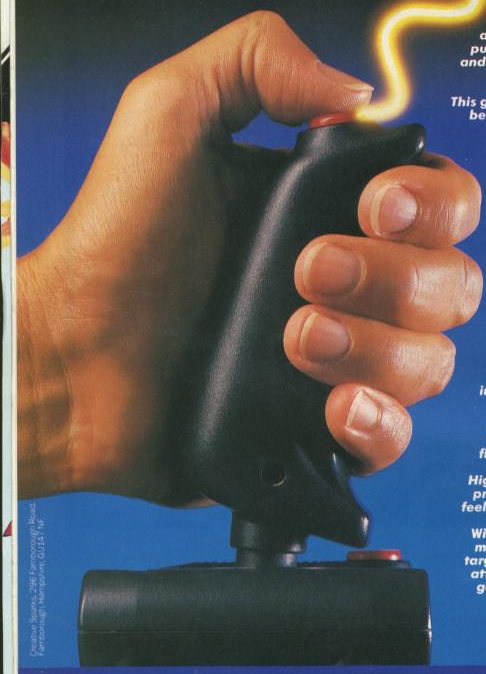

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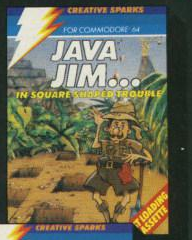

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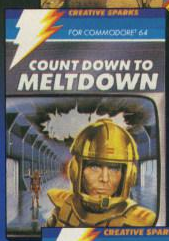

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Saving time and trouble with Basic sense

*Typing in listings or writing your own programs needn't be a frustrating chore — **Sarah Cotton** passes on some useful hints*

WHEN WRITING your own programs, or entering those from books or magazines you will find yourself repeatedly typing the main Basic keywords. Obviously, if these can be typed in very quickly then a lot of valuable time can be saved. Program 1 should help you to develop this skill.

When you RUN the program you will be asked to type a keyword. Do this, following up with the return key. If you make a mistake then the computer will tell you and give you another chance.

Many of the Basic keywords can be abbreviated as you type in a program, but when it is listed the words will all appear in full. A complete list of abbreviations appears in the appendix of your user manual but Table 1 shows a few of the most useful ones. For example, type:

10?"HELLO"

instead of:

10 PRINT "HELLO"

When typing in any program you are very likely to make mistakes or wish to change some of the lines. Re-typing a whole line for one slight alteration can be extremely tedious, but the INST/DEL and cursor keys make things much easier. For example:

10 PRINT8+4

Let's say you want to change the 8 to a 2. Use the cursor up key to take the cursor back to the correct row of the screen the line appears on. It should be flashing over the figure 1 of the number 10. Now use the cursor right to position it over the 8, press 2 and then RETURN. To check your alteration has been noted use LIST.

Insert

Let's go back to our original program, this time changing the 8 to 28. This will mean us 'inserting' an extra character. As before, move the cursor until it is flashing over the 8. Press shift along with INST/DEL and a gap will be created. Follow this by depressing the keys 2 and RETURN.

This alteration can be reversed by positioning the cursor over the 8 and pressing INST/DEL. Immediately the 2 will disappear.

This method of editing can also be very useful when many similar lines have to be typed in. See program 2.

Type in the first of these lines in full, remembering to press return. For each successive line move the cursor up and change everything that needs to be altered, including the line number itself. Remember to press return after each line, and use LIST to check all have been entered correctly. ▶

Program 1

```
10 PRINT"{CLR}":REM CLR
20 R=INT(RND(1)*10)
30 FORT=1TOR:READN$:NEXT
40 PRINT"{DOWN} PLEASE TYPE ";N$:REM CRSR DO
WN
50 INPUT A$
60 IFA$<>N$THENPRINT"{DOWN}   MISTAKE":GOTO4
0:REM CRSR DOWN
70 RESTORE:GOTO 10
100 DATA PRINT,POKE,INPUT,GOSUB,RETURN,G
OTO,THEN,FOR,NEXT,RESTORE
```

Program 2

```
10 IFX=YTHENG=0:PRINTG:END
20 IFX>YTHENG=1:PRINTG:END
30 IFX<YTHENG=2:PRINTG:END
40 IFX<>YTHENG=3:PRINTG:END
```

Program 3

```
10 PRINT"HELLO";:PRINT"GOODBYE";:GOTO10
```

Program 4

```
10 FORT=1TO4
20 PRINT"HELLO"
30 NEXTT
```

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◀ In entering programs from books or magazines I always find it useful to have a piece of card to put just below the line I'm typing in. As your eyes flicker from the screen to the program listing, it saves them from having to search around the page, and it also helps to avoid mistakes.

Book or magazine programs will probably contain a lot of REM statements. If you are concerned with the structure of the program or think you might like to make some alterations to it then these should be left in in full. Otherwise you could save time by just typing the REM's and omitting the following explanations. It could be dangerous if you got rid of the REM lines completely. For example, if line 100 is REM Make a Noise and elsewhere there is another line saying GOTO 100, you would get an 'Undef'd Statement' error if line 100 was totally removed.

While writing your own program, it is very helpful to keep a list of variable names and what you are using them for. This will save you having to keep looking back over your program to find the first mention of a certain variable, and working out what it has been assigned to.

The amount of typing you have to do can be reduced by using short variable names — for example, A$ instead of AA$. Also, if a number or word is to be used several times it is best to hold it in a variable rather then keep typing it out.

Multiple lines are lines containing more than one instruction. For example, see Program 3.

Branching

Each statement is divided by a colon (:) but it should be noted that each line can only be 80 characters long. These multiple lines reduce the number of line numbers that must be typed in. Before you start using them here is a brief warning. Consider this line:

10 IF X=Y THEN PRINT "HELLO" : GOTO 100

The computer will only branch off to line 100 if X equals Y. If this is not true the whole line will be ignored.

When writing a program you will often find that parts of it will need to be repeated. This can be achieved in two ways. The first is the FOR....NEXT loop.

As I have already explained this method of repeating an operation a set number of times in an earlier article, I will not go into any details. Program 4 is a short routine to print a word 4 times as a reminder.

A For....Next loop only allows you to repeat an operation one time straight after another. A subroutine is a short program in its own right, which can be called by the main program at any time. The lines of a subroutine are generally in the thousands, and it is conventional to begin them with an explanatory REM statement.

The command 'GOSUB X' will send the computer to the subroutine beginning with line number X. The 'RETURN' statement does the opposite, returning the computer to the place where it left off in the main program. See programs 5a and 6.

The subroutine is held in lines 1000 ▶

Program 5a

```
5 REM PROGRAM FOR VIC-20
10 PRINT"s":REM CLR
20 INPUT"   WHAT IS YOUR NAME ";N$
30 GOSUB1000
35 PRINT:PRINT
40 INPUT"   HOW OLD ARE YOU ";A$
50 GOSUB1000
60 END
1000 REM MAKE A NOISE
1010 POKE36878,15
1020 POKE36876,209
1030 FORT=1TO250:NEXT
1040 POKE36876,0
1050 RETURN
```

Program 5b

```
5 REM PROGRAM FOR COMMODORE 64
10 PRINT"s":REM CLR
20 INPUT"   WHAT IS YOUR NAME ";N$
30 GOSUB1000
35 PRINT:PRINT
40 INPUT"   HOW OLD ARE YOU ";A$
50 GOSUB1000
60 END
1000 REM MAKE A NOISE
1010 POKE54296,15
1020 POKE54277,0
1030 POKE54278,240
1040 POKE54273,22:POKE54272,227
1050 POKE54276,17
1060 FORT=1TO250:NEXT
1070 POKE54276,0:POKE54277,0:POKE54278,0
1080 RETURN
```

Program 6

```
10 FORT=1TO5
20 READ N$(T),N(T)
30 PRINT N$(T),N(T)
40 NEXT
100 DATA FRED,123,JACK,356,PETER,874,SAR
AH,100,JANE,720
```

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◀ onwards. Each time the user inputs information, the computer is sent to the subroutine by the GOSUB command and works through it. When it reaches the RETURN it goes back to the statement following the GOSUB command.

The 'END' is required in line 60 to stop the computer running into the subroutine. If it is omitted you will get a 'Return Without Gosub' error because a Return has been encountered and no Gosub command has been issued.

The use of subroutines is essential when writing games programs. The computer needs to constantly branch off from the main program to perform such operations as moving objects, firing and making noises.

Subroutines can often be used in more than one program so it is useful to keep a record of the most versatile ones for future reference.

Arrays

Earlier I mentioned the use of shorter variable names. Here is another way in which variables can save you time. Arrays are lists of variables with the same "first name" which can hold either numbers or letters. An extra number in brackets following the first name allows us to distinguish them. This number is called the SUBSCRIPT.

For example, let's read in 5 names along with their telephone numbers and print them out on the screen (program 6).

The numbers are held in the variables N(1) to N(5) inclusive, the names in N$(1) to N$(5). Without arrays we would have needed 10 separate variables and a longer, more complex program.

So far we have not worried how long the list of variables in an array is. Your computer assumes that any array you mention contains 11 values with subscripts from 0 to 10. It is safer if you need less, and essential if you need more, to add a DIM statement. DIM stands for 'dimension an array'. It should appear at the beginning of your programs in the form:

Line number DIM first name (size of array)

For example, we should add the following line to our telephone number program:

```
5 DIM N(5), N$(5)
```

An array can only be dimensioned once in a program. If we wanted our program to run over and over again then we would add the line:

```
50 GOTO 10
```

If instead we had added:

```
50 GOTO 5
```

then we would have got a 'Redim'd Array' error.

Try program 7. Again we get an error. This occurs because the computer automatically performs a dimension operation in line 10, having not met the array before. This cannot be repeated in line 20.

The ideas we've discussed should make it a lot easier for you to use published programs, and to write your own in an efficient way. We'll look in future articles at more ways to make using the Commodore computers easier and more fun to use.■

Program 7

```
10 A(1)=99
20 DIM A(5)
```

Table 1

COMMAND	ABBREVIATION
CLOSE	CL shift O
CONT	C shift O
DATA	D shift A
END	E shift N
FOR	F shift O
GOSUB	GO shift S
GOTO	G shift O
INPUT	I shift N
LIST	L shift I
NEXT	N shift E
OPEN	O shift P
POKE	P shift O
PRINT	?
PRINT	P shift R
READ	R shift E
RESTORE	RE shift S
RETURN	RE shift T
STOP	S shift T
PEEK	P shift E
THEN	T shift H
STEP	ST shift E
WAIT	W shift A

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Wundaful

Starring role in Wunda Walter, Interceptor Micros' new Vic 20 scramble game, is taken by their spherical superstar Wallie.

Versatile chap that he is, Wallie exhibits a strange ability to levitate for as long as the joystick's firebutton is pressed. Only when it's released again does gravity take over and he drifts back to earth.

OK, so it's not the sort of social skill that'll guarantee him a place at Eton, but it certainly helps to avoid the trees, volcanos and rugged terrain that scrolls along during the game. It's also his only defence against the mutants that zoom along impeding the

airspace. Fail to dodge one of these and Walter loses one of his five lives.

Four distinct terrains, each with its own brand of aggressor, should keep the player sweating for quite a while. Graphics and sound are superb, with some of the smoothest animation and most polished music you're ever likely to encounter on the Vic.

Scrolling messages, responsive control and a sense of fun make this a package worthy of attention.

Program: Wunda Walter!, Vic 20
Supplier: Interceptor Micros
Price: £6.00
Graphics: ★ ★ ★ ★ ★ ★ ★ ★ ★ ★
Sonics: ★ ★ ★ ★ ★ ★ ★ ★ ★
Gameplay: ★ ★ ★ ★ ★ ★ ★ ★ ★

Boogie with a ghoulie

You may or may not have seen the film (if not, do). It's a brilliantly scripted and produced comedy supernatural thriller about a team of zany (hate that word) scientists who set themselves up as ghost exterminators, and find themselves the only ones standing between the dreaded demon Zuul and the helpless world.

The game retains a lot of the spirit (joke) of the film, as you equip your ghostbusting

team, set off to the haunted houses, and try to catch spooks in your ghost traps without accidentally zapping yourself with your negative ionizer backpacks.

The most enjoyable aspect of the game is the astounding musical score, based on Ray Parker Junior's hit song Ghostbusters, and the software speech which is certainly the most impressive yet produced on the 64. This game is going to be the Christmas hit — go out and buy it.

Program: Ghostbusters, 64
Supplier: Activision
Price: £10.99
Graphics: ★ ★ ★ ★ ★ ★ ★
Sonics: ★ ★ ★ ★ ★ ★ ★ ★ ★
Gameplay: ★ ★ ★ ★ ★ ★ ★

Quickie brickie

Palace, the people who brought video nasties to your sitting room, has released a pair of original games for the Unexpanded Vic 20. Bricks is one of them.

You have joystick control of a little brickie who begins each game at the bottom of the playing area.

Bricks rain down from that great hod-carrier in the sky, forming an ever growing mound that steadily fills the screen. Fail to avoid this falling masonry and you'll find out what it's like to be just another brick in

the wall. On top of this, you've got to get to the top of the pile and stay there, not easy when you can only hop up one brick at a time.

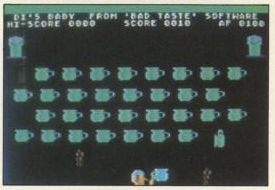
By darting about in this fashion, and using the limited facility you have for rearranging the pile, it's possible to scramble up to the next level. Unfortunately, I don't think that Palace, despite being the originators, have produced the definitive version of what is really a very good game-play idea. Good clean fun though.

Program: Bricks, Vic 20
Supplier: Palace Software
Price: £4.95
Graphics: ★ ★ ★ ★ ★
Sonics: ★ ★ ★ ★
Gameplay: ★ ★ ★ ★ ★ ★ ★

Di now, play later

A monumental exercise in bad taste, which has gained a good deal of attention from the gutter press (I mean the Daily Star, not Commodore User), Di's Baby is actually quite good fun for those with a strong stomach and a good sense of humour.

There are five screens, in which you have to help the Royal couple conceive another in their long series of babies. In the first, The Joys of Parenthood, Charles races around with the potty clearing up after the royal



infant, and it gets more and more tasteless as time goes on. What with the trip to Di's bedchamber, avoiding the pursuit of mad doctors and journalists, and flying nappies, it's fun all the way. A good soundtrack too, composed of manic versions of God Bless the Prince of Wales and other monarchic favourites.

Sprite graphics throughout, reasonable sound effects and a unique Aggravation Factor scoring method make Di's Baby more than just an exercise in bad taste — though even at that level it's well worth looking out for. Not one to play while the Queen's Speech is on the telly on Christmas Day, though.

Program: Di's Baby, 64
Supplier: Bad Taste Software
Price: £5.99
Graphics: ★ ★ ★ ★ ★
Sonics: ★ ★ ★ ★ ★
Gameplay: ★ ★ ★ ★ ★

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The Activision Eight.

Pitfall Harry has to recover the priceless Raj Diamond from the lost caverns. But there is a small matter of poisonous frogs. Albino Scorpions. Vampire Bats. Electric Eels. Need we go on?
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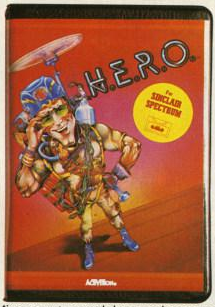

Miners are trapped deep underground. Threatened by molten lava, poisonous bats, snakes, spiders. You alone in the person of Roderick Hero – Helicopter Emergency Rescue Operation – can help.
Running on Commodore 64, Spectrum, MSX

And you thought it was just a movie. But Ghostbusters is a computer game, too. Following the film with incredible accuracy. Even down to the chart topping music score.
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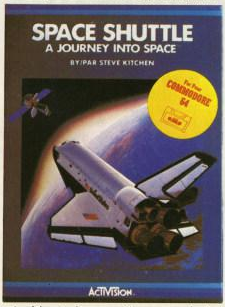

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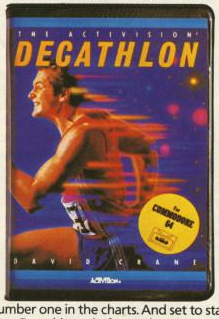
Stay cool. Stay low. Stay alive. Your mission is to fly down the world's most heavily defended river, destroying everything the enemy hurls at you. But beware... your fuel tanks are nearly dry.
Running on Commodore 64, Spectrum, MSX



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Merton the maintenance man is set for yet another routine night in charge of the toy factory. But something has gone terribly, terribly wrong.
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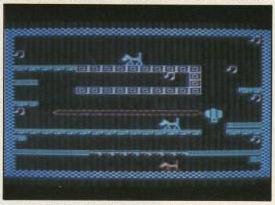
Platforming miracles

Software Projects has given admirable support to the Vic 20 and the latest offering, The Perils of Willy, deserves to do well.

It's a version of Manic Miner (an official one at that) with 33 screens full of the girders, walls and other obstacles we've come to expect from this sort of game.

Animated opposition in the form of wild dogs, geese and merciless escalators disrupt every attempt to move up to the next level.



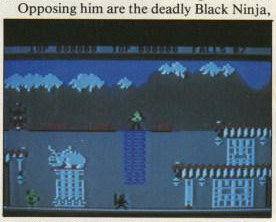
As with all 'miner' derivatives, success depends on running, jumping and standing still at all the right times. Master this technique and the early levels should pose no problem. Unlike other machines, the Vic 20 is not spoilt for choice when it comes to miner games, so this is a welcome bit of gameware. If you've got a 16K, a joystick and a few quid to spare, this one's worth a second look.

Program: The Perils of Willy, Vic 20 + 16K
Supplier: Software Projects
Price: £6.95
Graphics: ★ ★ ★ ★ ★ ★ ★
Sonics: ★ ★ ★ ★ ★ ★ ★ ★
Gameplay: ★ ★ ★ ★ ★ ★ ★ ★

Martial artist

Nothing like a good bit of oriental mayhem to get the circulation going . . . Bruce Lee, now not so much a person, more a trademark, has been dragged back from his untimely grave to feature in this martial arts knock-about from the US company Datasoft. It's rather a good game, as the little yellow figure of Lee scrambles up and down the walls of a Chinese fortress, leaping into the air to collect magic lanterns.

Opposing him are the deadly Black Ninja,



a staff-wielding warrior who can give you a nasty chop, and the Green Yamo, a gigantic Sumo who flies through the air and tries to kick you in the jugular. Lee responds with joystick-controlled chops, kicks and leaps, and a good time is had by all. It's fun working out which lanterns open the doors to the next of the 20 chambers, and I have yet to meet the ultimate peril, the ancient Wizard.

Overall, rather good.

Program: Bruce Lee, 64
Supplier: US Gold
Price: £9.95
Graphics: ★ ★ ★ ★ ★ ★
Sonics: ★ ★ ★ ★ ★ ★
Gameplay: ★ ★ ★ ★ ★ ★

Kill him, my robots!

One of the first from CBS Electronics in their tie-up with ace Yank software wallahs Epyx, Impossible Mission is a remarkable cartoon-like multi-screen arcade epic in which you play a secret agent.

There are 32 rooms with 90 different robots out to squash you as you try to penetrate the computer-controlled hideaway of the loony scientist Elvin, who is holding the world hostage with the threat of nuclear annihilation. The animation of the secret agent is remarkable, and the software

speech almost as good as that on Ghostbusters (especially a blood-curdling shriek when you fall down a shaft).

The pieces of the puzzle which will enable you to open the master control room, and get at the awful Elvin, are found by investigating various computer terminals and bits of furniture. Secret codes help you to freeze the malevolent robots or rearrange the platforms, which will be crucial in some screens.

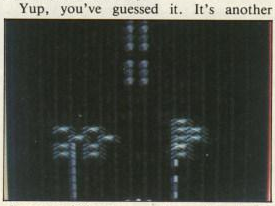
Overall, a wonderful game, and hopefully the first in a long series from Epyx/CBS.

Program: Impossible Mission, 64
Supplier: CBS
Price: TBA (disk only)
Graphics: ★ ★ ★ ★ ★ ★ ★ ★
Sonics: ★ ★ ★ ★ ★ ★ ★ ★
Gameplay: ★ ★ ★ ★ ★ ★ ★ ★

To boldly go where no man . . .

Here's a subtle little offering for the basic Vic 20 from Romik. Lots of cute little aliens swoop down from another solar system to say hello. We, with all the diplomacy, tact and global understanding that centuries of civilization bring, offer them the hand of friendship.

Yup, you've guessed it. It's another



chance to kill now — ask questions later. Planetful after planetful of poor defenceless travellers are blown to bits in a crescendo of explosion, colour and chaos.

Romik does this sort of think awfully well and although Galaxia is yet another version of Galaxions it's still very playable.

To be frank, I've seen better from Romik but since one Armageddon looks very much like the next it's hard to quantify exactly what's missing from this one.

If you're the discerning, violent type this is probably worth a place in your collection.

Program: Galaxia, Vic 20
Supplier: Romik
Price: £5.95
Graphics: ★ ★ ★ ★
Sonics: ★ ★ ★ ★ ★
Gameplay: ★ ★ ★ ★ ★ ★ ★

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IDEAL IDEAL is an Interrupt Driven Extendible Animation sub-Language. Once you have mastered IDEAL's easy to learn set of over 80 commands and just a little FORTH, you will be ready to produce arcade-quality games even if you don't know machine code. Up to 255 Sprites, each with its own user-defined dimensions can be moved around the screen (or memory), scrolled, spun, reflected enlarged or inverted with amazing speed and smoothness. Operations are possible between screen windows, Sprites and Sprite windows. Sprites can even stretch across several screens, so those difficult scrolling landscapes that form the basis of so many games are easy to achieve. Sinclair's own sound and graphics commands such as CIRCLE, DRAW and BEEP are fully supported, and there are some unique collision detection facilities.

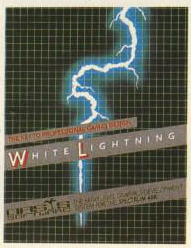
MULTI-TASKING Because **White Lightning** uses interrupts, you can effectively run two programs at once. This means of course, that games like Space Invaders and Defender can be written without complex timing calculations. So while one program smoothly scrolls the landscape, the second animates the other characters. This is undoubtedly one of White Lightning's most powerful features.

MARKETING AND PORTABILITY Although **White Lightning** uses an integer FORTH as its host language, programs can be written in a combination of BASIC, FORTH, IDEAL and machine language.

What is more, programs written in FORTH/IDEAL will be highly portable between the Spectrum and implementations under development for other popular micros.

When it comes to marketing your completed games, there's no problem either. In fact Oasis themselves will offer to market outstanding software.

SPRITE DESIGN White Lightning, comes complete with a separate 20K program for developing the Sprites used in the main system. Not only can you use this to design your own Sprites from scratch, it also comes complete with 168 pre-defined characters covering games like **Asteroids, Pac-Man, Assault Course, Defender, Space Invaders, City Bomber, Lunar Lander, Frogger, Centipede, Donkey Kong** and many, many, more. These characters are ready to use or can be enhanced. And Sprites can be saved to tape between editing sessions before being finally loaded into the main program.



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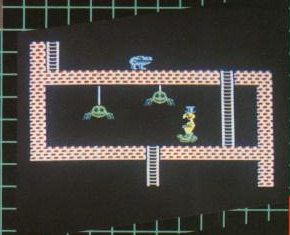

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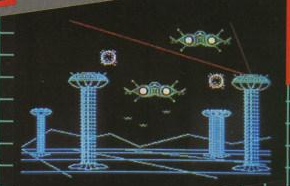

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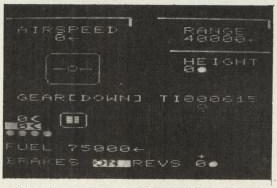
Flights of fancy

Flight simulators for the expanded Vic are pretty scarce, but this has got to be the first comprehensive one for the unexpanded machine.

And comprehensive it certainly seems to be. All the controls you'd expect are there — speed, brakes, undercarriage, etc. In fact there's everything you need to take control of several tons of metal and a plane load of human beings.

In what must rank as the understatement of the year, the inlay card mentions that the simulation has been mathematically condensed. When you consider the facilities offered by the basic Vic, the term 'miraculously condensed' seems more appropriate.



There's no room for a 'through the window' display but the screen's full of dials and gauges. These are well presented and respond satisfyingly to keyboard inputs.

The instructions supplied are clear enough to allow even the non-aeronautical amongst us to take off and fly along for a bit without killing anybody. Landing is another story.

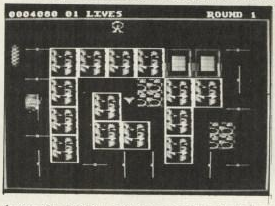
Talking of landing, a nice touch when you crash (which you will) is a little inquest into what went wrong. Though it probably wouldn't satisfy the Civil Aviation Authority I found it pretty useful.

A great program. A must for aspiring Biggleses everywhere.

Program: Flight Zero One Five, Vic 20
Supplier: AVS
Price: £6.95
Graphics: ★ ★ ★ ★ ★
Sonics: ★ ★ ★ ★ ★
Gameplay: ★ ★ ★ ★ ★ ★ ★ ★ ★

Drelbs in trouble

A bit of a peculiarity, this one, perhaps more of an exercise in unusual graphics than a game. On first loading, the game grid looks like something similar to PacMan, but that's misleading. The object of the game is to control your Drelb around the Atomic Flip Grid, where he must flip gates to form cubes, which then glow. Opposing him are the nasty Trollaboars, who try to break down the boxes. Having completed all the possible squares on one screen, your Drelb must jump through a magic window into the land of the sinister Gorgolytes, and free the entrapped Drelbs found there.



Diamonds, mysterious female faces, and the dreaded Screwhead Tanks also occupy the grids.

Overall it's a bit whacky, but very playable. Check it out.

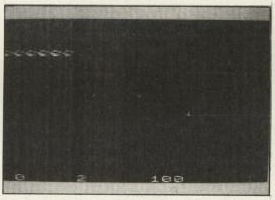
Program: Drelbs, 64
Supplier: US Gold
Price: £9.95 cassette, £14.95 disk
Graphics: ★ ★ ★ ★ ★
Sonics: ★ ★ ★ ★ ★
Gameplay: ★ ★ ★ ★ ★

Snake snack

If you bought a Vic 20 as part of the £140 starter pack, you'll recognise Space Snake as a version of the race game given away in the deal.

Set in deep space, you have keyboard control of a snake, or more precisely a snake's head, as it struggles to avoid the mines that fly at it from the right hand side of the cosmos.

The mines don't look much like mines but that's OK because the snake doesn't look much like a snake either.



Dodge the mines for a bit and you meet the entrance of a long twisting tunnel, the floor of which is littered by eggs. Grabbing five of these causes the tunnel to end and you're back dodging the mines again.

Space Snake has all the features that made Blitz such a huge success — the graphics are basic, the sound's awful and the scenario's pathetic. It's also very, very playable. Should do well.

Program: Space Snake, Vic 20
Supplier: Commodore Business Machines
Price: £4.99
Graphics: ★ ★ ★
Sonics: ★ ★ ★ ★
Gameplay: ★ ★ ★ ★ ★ ★ ★ ★

Ducking and weaving

This isn't up to the standard we were led to expect it might be by the popular Chiller. However, at £1.99 it's daft to complain about a perfectly playable little arcade game like this.

There are five screens, and in each your space ship is controlled by the joystick. In the first, bouncing aliens must be avoided for a certain time — you can't shoot them. In screen two, you must dodge asteroids and firebolts which are impervious to your weapons. The next is a bit more original, in that you must travel up a tractor beam to dock with a mother ship, avoiding asteroids and high gravity wells. Next, you have to break through 20 force shields to destroy the alien mothership, and lastly you must struggle to activate the defence system of the new planet which is to become your home. I admit I haven't got that far yet, but although the graphics and sound effects are fairly laughable I think it's fair to say that all that lot should be enough to keep the kiddies happy on Christmas morning.

Program: Starace, 64
Supplier: Mastertronic
Price: £1.99
Graphics: ★ ★ ★ ★
Sonics: ★ ★ ★
Gameplay: ★ ★ ★ ★ ★

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CLIFF HANGER

AUTHOR – JAMES DAY ORIGINAL MUSIC – BRIAN DOE

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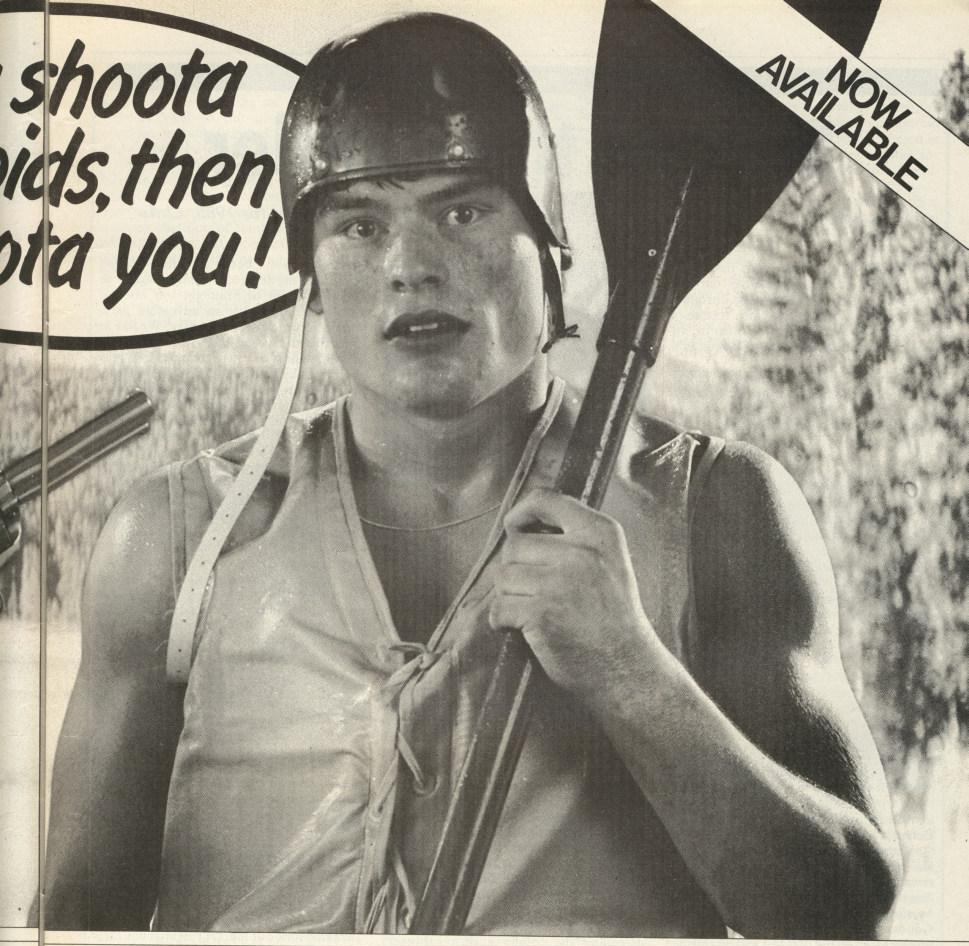

Shoot the Rapids

AUTHOR – PAUL BUNN

Ever wondered what it would be like to face the fierce white water in a top class canoeist slalom run? Well wonder no more because you can enjoy the fast action thrill of competitive canoeing from the comfort of your own armchair with Shoot the Rapids.

It's a game that involves real skill because you must move your joystick to simulate paddling action. You must get through the gates of the slalom course in the fastest time possible, while avoiding the river bank and rocks. There are also extra hazards like rogue speed boats and interfering beavers to worry about.

This multi level game features increasingly difficult river courses with superb graphics and smooth scrolling along the river. Qualifying times have to be reached to move onto the next course.

With Hall of Fame, one or two player scoring and joystick compatibility, Shoot the Rapids is probably the best sports action simulation game devised to date. Available from any good software store for just **£7.95.**

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Beyond the frontier

The software house with a background in role-playing games has plans for 1985. ***Chris Jenkins*** *talks to Clive Bailey*

HAVE YOU EVER paused to think that playing computer games involves not just one revolutionary element — the introduction of high technology into ordinary households — but two? The other is, of couse, the concept of games playing as a hobby.

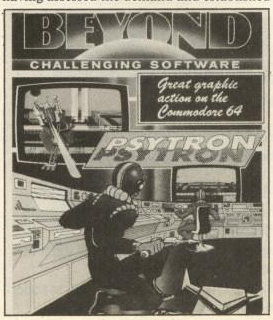
Until the computer boom most of us only played games (other than physical sports) on rainy Sunday afternoons or at Christmas. The concept of collecting and playing games, in software form or otherwise, is a relatively new one, and will probably become the subject of many a sociology thesis in the 21st century, when all the work is done by machines and we will face the problem of entertaining ourselves not just on rainy Sunday afternoons, but 365 days a year.

The software house **Beyond** is made up largely of people whose previous experience was in the field of board and role-playing games; strategic simulations and **Dungeons and Dragons**-type fantasy adventures. Now they are trying to do for the software market what they did for the games hobbyists; provide not only quality products, but an involved and sympathetic back-up service.

Experience

Marketing manager **Clive Bailey** explained that Beyond, a division of a well-known publishing company, was founded in 1983 by publishers **Terry Pratt** and **Bill Delaney.**

"Terry is a very experienced publisher in the computer market, and Bill has a remarkable eye for a good product. Together they test-marketed four games for a range of computers — including **Goodness Gracious** for the 64 — and having assessed the demand and established



Bailey of Beyond

trade contacts they launched Beyond in April '84."

Beyond currently operates in an unique way — budgeted as a magazine, the company is obliged to release games as soon as they are ready in order to satisfy accounting procedures. "We're hoping all that will change in '85" mentions Clive — "we'd like to be more independent, to be able to release games only after we've built up stocks, and be able to preview them to the press beforehand."

The Beyond launch titles, **Psytron** and **Lords of Midnight,** were for the Sinclair Spectrum, though both are not available for the 64. Psytron is typical of the combination of arcade action, strategic thinking and high-quality programming which all Beyond titles feature. Psytron is the defence computer of the Betula 5 space colony, and the challenge of the game is to survive in real time for one hour, while defending the colony against saboteurs, alien spacecraft, supply shortages and equipment damage.

Mike Singleton's Lord of Midnight has made an immeasurable impact on the computer games market; more than just a graphics adventure, it features a "landscaping" technique which shows the view through the players eyes at each step of the game. The player's objective is the defeat of the evil Doomdark, either by military means with the aid of the Lords or by The Quest, in which the character Morkin must find and destroy Doomdark's Icecrown. With 32 characters to control and 4000 graphic locations, Lords of Midnight can be a complex and rewarding game to play.

Author Mike Singleton, like all the Beyond authors, does not work in-house. "Mike has been designing games since the age of nine" explains Clive, "though his speciality had been in play-by-mail computer-moderated games such as Starweb. Lords of Midnight was his first attempt at producing an adventure game you could watch as well as play. We like to think that the success of Psytron and Lords of Midnight was the salvation of many games dealers through the slow summer period — because they appealed to the hobbyists, they sold steadily, whereas other games sell seasonally. Mike's carrying on the series with **Doomdark's Revenge,** in which Luxor the Moonprince searches for his kidnapped son Morkin. There are 6000 locations in this game, and 124 independent characters. The third part of the trilogy, **Eye of the Moon,** is planned for release in the Spring."

We asked Clive why Beyond launched their major games on the Spectrum, and have only now reached the stage where launches are planned on the Spectrum and 64 simultaneously. "Part of the problem is in finding sufficiently experienced program convertors. Tayo Olowu and Paul Voysey produced Psytron and **Psi-Warrior,** the follow-up. Hedley Voysey did the 64 conversion of Psytron, and we were very pleased with the results. Often you'll find that programs converted to the 64 from the Spectrum lose quality, but with our conversions we think they get better. Sound effects and graphics are certainly better on the 64, and we want people who can make the most of that.

Blitz

"Another of our concerns is cost. We've priced Psytron at £7.95 and Psi Warrior at £9.95, which we think represents good value for the retailer and the customer considering the complexity of the games. At the same time our market research indicates that there is a market for less intellectual

games at lower prices — the 10-16 age group looking for shoot-'em-ups pure and simple. We're thinking of launching a separate label to put out this kind of program, tentatively called **Blitz.** The kind of price we'd be looking at would be £3.99.

The main body of the market still consists of 14-22-year-olds, about 24% of whom are female. We don't particularly aim for the female market, though there is a strong tradition of females playing role-playing games, but Doomdark's Revenge features both a villainess and a heroine. What puts many females off using computers is the unnecessary jargon — bits, bytes, ROM and RAM are male preserves, and we try to avoid unnecessary technical references. Our game packages and instructions aim to be an interesting read rather than a technical exercise."

Beyond's last four games, bought in from America, are admittedly "fillers", to keep the company going. 'If they'd been released when we intended to bring them out, in May, they would perhaps have made

Terry Pratt — experienced

a bigger impact. As it was, technical problems delayed them until September, and now perhaps they don't look so impressive." Clive is judging from the point of view of someone dedicated in the highest programming standards — in fact **Ankh, Aztec, MyChess 2** and **Mr Robot** are all impressive programs in their own right. Ankh is a surreal metaphysical challenge in which you must manoeuvre a "mindprobe" through an interconnecting net of chambers, solving problems based on, but not necessarily dependent on, logical thought.

Mr Robot is a 22-screen Manic Miner-like challenge, with a difference; after conquering all the screens, you can design and save up to 26 screens on your own, using a cursor to select and place features.

Aztec is a complex underground adventure featuring high-quality animation. The hero, an Indiana Jones-type explorer, searches through the levels of a forbidden temple. The hero can walk, run, jump, shoot, crawl and fight with a variety of weapons, and must brave attacks from pumas, snakes, man-eating plants, dinosaurs and spiders.

There's also a powerful three-dimensional chess program, MyChess 2.

"They're all good games, but not state of the art. The Americans are desperate to dump software on the UK, because they made the mistake of treating games software as if it was big business venture instead of a cult or hobby. They're finding out now that you can't just keep pumping out product, like pop music, which is absorbed passively; only very high quality product will sell continuously, since it's really a seasonal market.

Revolutionary

"We'll always consider product from American companies, although many of the best ones have now been signed up by big corporations. One of the products we're working on is **Spy Vs. Spy,** from First Star, based on the Mad cartoon strip. This features cartoon-quality graphics and a revolutionary split-screen technique called SimulVision, whereby two players can watch each other's characters, the White Spy and the Black Spy, searching an embassy for hidden documents and planting bombs.

'Psi Warrior is designed by the creators of Psytron, and features the hero travelling on a surfboard-like hoverplane through a giant silo seeking ut Psi-monsters. The perspective graphics are very convincing, and as you progress through the game you can acquire certain skills such as teleportation, invisibility and clairvoyance.

"There are several other products at various stages of production. **Operation Titan** uses the landscaping features of Lords of Midnight combined with arcade features. **Nakh** is a follow-up to Ankh, using the same kind of lateral thinking

problems. **Shadow Squad** is being produced by Denton Designs, part of the fall-out from Imagine. It's a strategy adventure featuring a team of six human and android operatives carrying out a daring mission in space, and using some of the routines for character interaction derived from the ill-fated MegaGames.

"We're also thinking of starting up a series of expert systems programs, based on the many magazines published by our parent company. We can establish the audience through market research, and consider programs based on hobbies like fishing or gardening.

"At the same time we're looking at the idea of an international label to put out Japanese and European games.

"Our promotion plans rely on word of mouth rather than heavy advertising and hype. The games-playing market went through everything the software industry is going through, starting with low-quality products and working up to very sophisticated cult games.

Bill Delaney — eye for a good product

"From my marketing experience in gaming, banks and oil companies it's clear to me that what we have to do is present the product to the consumer in an exciting way and at an affordable price. What I'd like to do is promote games with competitions and good PR rather than with inflated advertising claims.

"The winner of the Lords of Midnight contest, John McIntyre, was to have had this winning game transformed into a novel. That idea fell through, but what we're considering now is a role-playing game or fighting fantasy collectors edition magazine instead.

"What we're trying to do is work through distributors like Centresoft and Microdealer, who we think give a good service, and establish Beyond in such a way that the customers make a conscious decision to buy Beyond games because they know that they're high quality. A percentage of purchases will always be impulse buys, but we want to build up a regular following.

"We're trying hard to do things in a friendly way; the software industry isn't renowned for doing for doing things well, but we're getting there."■

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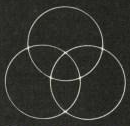

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The 1541 is undoubtedly the ultimate Commodore 64 add-on allowing programs and data to be quickly saved and recalled.

The 1541 also allows the 64 user to use professional application programs like Microsoft's "Multiplan" and Precision Software's Superbase.

A 1541 Disk Drive is the First Prize in our Christmas Competition. All you have to do is to carefully read the product reviews in this issue of the Commodore club catalogue, then answer the questions in our quiz.

First Prize will go to the first correct entry drawn on 31st January. 10 prizes of FREE Commodore Software will go to the runners up.

CLUB SUCCESS

The Logic 3 Commodore Club was launched in September, 1984 and has been an outstanding success. The rapid growth of the Club has kept Logic 3's staff working seven days a week just to keep up with demand.

Tony Toller, Logic 3's managing director and coordinator of the Club, explains its success as follows: "With other clubs once a person has joined there is no more reason for the club to try to support its members who each month *have* to purchase a certain number of products from a short list. Our Club is different. Members have no obligation to purchase any products from the club so the pressure is on us to choose only the best quality products and offer the best possible prices. We also take a lot of pride in publishing independent reviews on all the products we carry and if we do not like something about a product we are not afraid so say so."

Tony Toller's policy of offering club members a real service rather than just running "yet another mail order business" is winning new members all the time. But size by itself is not the main objective "as we grow so we will be able to improve our service to members still further and perhaps, one day, develop the club catalogue into a proper magazine." With the Christmas edition of the catalogue already running at a bumber 20 pages containing reviews of more than 180 products that day may come quite soon!

INSIDE

★ **APPLICATIONS** *A selection of the most effective application programs available.*

★ **GAMES** *The best games for the Commodore selected by our own review panel and rated according to: graphics, sound, colour, originality and interest.*

★ **PROGRAMMING** *The 'Learn BASIC' tutorials really show you how to write structured programs in easy to understand stages.*

★ **UTILITIES** *Compose your own music.*

★ **HARDWARE** *Some good deals in hardware and peripherals.*

LOGIC 3's SOFTWARE PANEL

Neil Atkinson, pupil of Sir William Borlase School, spends his weekends in a shop selling home computer software, intends to work as a journalist.

Andrew Goltz, director of Logic spent 6 years with Commodor UK and International Division, instigated Commodore's 'Approved Product' scheme third party software.

Bliss Healey, graduate of L School of Economics, has translated business softwa French, currently working design of graphics for ed software.

Tony Toller, director of former journalist, spec business applications and co-ordinator of L software club.

COMMODORE CLUB

The Logic 3 Commodore Club has something for everyone: regular reviews, up to 25% off all the latest games and applications software, discounts on hardware.

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Beefing up Basic

***Chris Whitcombe** studies three extension packages for the 64*

YOU WILL ALL, no doubt, have read time and again about how limited is the Commodore 64's Basic. CBM has taken a lot of stick for not upgrading the language when this otherwise fine computer was released. Having said that, we all went out and bought one just the same, so perhaps it's not so bad after all. Looking on the bright side however, the lack of 'improved' commands has meant gainful employment for many a software genius, writing Extended Basic packages. There is now a multitude of these on the market at various prices and, one assumes, varying quality.

Disk version

One such package is **Breden's Basic** from Visions Software, which comes with a manual and a copy of the program on both tape AND disk, so that when you buy that disk drive you've always promised yourself, you won't have to go out and buy the 'Disk version' of the software (involving more expense); you will already have it. Also, if you are lucky enough to be running disks, the tape is handy as a back-up in case of unforeseen disasters.

The program itself only uses about 8K so not only does it load in no time at all, even from tape, it also leaves plenty of room for you to do your own thing. The manual is well laid out and is divided into sections using 'colour-coded' index cards. Each command or function is detailed on a single page showing the Format, Parameters, and an explanation of exactly what it does. There is also a note at the bottom of each page listing keywords related to the one being described. I have to say that this really is the best manual I have yet come across. ALL the necessary information is supplied, and it's easy to find and simple to understand. This is how all manuals should (and could) be written. Enough preaching; let's see if it lives up to expectations.

When the program is loaded you are presented with a title page confirming that you have **Breden's Basic** running and that you have 29695 Basic Bytes free. All commands can then be used as in 'normal' Basic.

The first group of commands concern themselves with the creation and movement of Sprite graphics. There are 11 commands which enable you to do just about anything that you ever wanted to do with the little beasties including Expansion, Priority selection and Collision detection.

Sound chip

The next section has 29 extra commands related to the control of the screen and graphics characters, and includes the widely used PLOT, DRAW, HIRES and COLOUR. I won't go into detail here as to do so would require taking over the entire magazine for this review, but suffice to say that with these commands at your fingertips there is almost nothing you cannot do when it comes to Graphics, colour, drawing lines and rectangles, multicolour mode and User-defined graphics.

Sound is next, and there are 22 commands to help you get the best out of the 64's sound chip. Included are ENVELOPE, WAVE, PITCH and others that allow ready access to the delights of Ring modulation, Synchronization and Filter techniques.

Input/Output manipulation is one area where many people get stumped . . . including yours truly . . . but with Breden's Basic there are 11 commands to make life a little less complicated when checking for Keyboard input, joystick direction or light-pen position. Disk commands are next . . . DERR for finding errors, DIR for listing files and DOS which has 10 variants for doing most jobs from Formatting onwards.

Functions

Number juggling can be difficult on the 64 but not with this program to help. There are 21 commands which ease the strain of Fractions, Hex conversions, Radians, Bit testing and other mathematical nightmares. Four commands are included for error trapping and 11 more under the heading of Programming Aids. These include assigning groups of characters to Function keys, memory Load and Save, erasing parts of programs, key repeat and a 'quick keyword entry' mode. When using this ALPHA facility, pressing the alphabet keys with either the SHIFT or CBM key will cause the computer to print the relevant keyword assigned to the key pressed, a list of which appears in the Appendices.

Next we have 11 Enhanced Programming Structures making Repeats, Loops, etc. much simpler using the WHILE . . . DO . . . ELSE, REPEAT . . . UNTIL format.

I was slightly disappointed to find that there are no AUTO, RENUMBER or MERGE commands . . . but there are 135 other useful ones! Apart from that small gripe, this is an excellent package and if you are looking for a Basic Extender then you MUST try this one out . . . and at £39.95 it's not expensive.

A cheaper Extension Pack is **Supabasic** from Interceptor Micros. This one sells for less than £10 and has 72 new keywords. The

SUPABASIC
MANUAL
Visions
BREDEN'S BASIC
THE ESSENTIAL EXTENDED BASIC FOR THE COMMODORE 64 COMPUTER
CENTURY
PETER LUPTON AND FRAZER ROBINSON
SUPER BASIC
FOR THE COMMODORE 64
36 extra BASIC commands for easier programming with Utilities, Sounds, Colour, Graphics and Sprites

package consists of the program on cassette (but it doesn't take very long to load) and a booklet listing all the commands available. It is divided into eight sections, the first of which covers Graphics. The 'usual' ones are here including HIRE, PLOT, DRAW and a rather nice WINDOW facility which allows you to display moving Text at the bottom of a HIRES screen.

The section on Sound only has five commands, while are VOLume, ENVelope, WAVEform, PULSE width and PLAY. Whilst these may be sufficient for putting sounds to games, they leave something to be desired if you wish to be a little more adventurous on the music scene.

The Programming Aids section has 12 extra commands including OLD, RENUMBER and REPEAT. There are four more to help in Error trapping and a KEY command which lets you define the Function keys with strings of characters.

Sprites

Sprites and User-defined graphics have a section all to themselves. The commands included will allow you to set up Sprites, move them about the screen and check for collisions; either Sprite-Sprite or Sprite-Background. There are six Input/Output commands provided by Supabasic covering Tape, Disk and Joystick operations. Easier manipulation of numbers and strings is accomplished by seven commands, including converting Hex to Decimal (and vice-versa) and reading the function keys. Memory manipulation only warrants four commands; DEEK and DOKE for reading and setting two consecutive memory locations and CEEK and COKE for reading and placing characters in memory.

The last section is dedicated to screen control and has 10 commands to help with screen and border colours, screen scrolling and cursor positioning. Most of the 72 commands can be abbreviated; many of them to a single letter followed by a full stop. Although the manual is not what I would call comprehensive, it is adequate, bearing in mind the cost of the package.

If you can't afford (or don't need) one of the more elaborate Basic Extenders, then this one is certainly worthy of consideration, especially as it costs no more than one (good) game.

Also called **Superbasic** (but this time spelt properly) is another package that sells for less than £10. This one is by Century Software and contains 36 extra Basic commands. The first thing that warms me to this piece of software is the note in the booklet explaining that it 'resides in the 4K block from $C000-$CFFF and makes extensive use of the spare memory locations in pages 0 and 2 of the RAM: any program using these areas of memory may corrupt Superbasic'. I wish more companies would tell us where their programs hide so that we could avoid making a mess of things when using these types of utilities whilst programming.

The first five commands we come across can only be used in immediate mode and not within a program. They are AUTO, DELete, RENUMber, OLD and PACK: all self-explanatory. The seven other utilities are DEEK, DOKE, PAUSE, RESET, HIMEM (for protecting an area of memory), AT (for placing the cursor at any screen position) and POP (for exiting nested subroutines).

There are seven Sound commands in Superbasic, and although none are concerned with Ring Mod or Sync, this program does assist in the use of Filters.

Graphics

Next come 11 commands for controlling the Graphics on the 64. There are two types of display: normal text, using 1000 bytes of memory and the two bit-mapped displays which use 8000 bytes and have individually addressable pixels. Three of the commands alter the colours of the text display and the other eight control the high resolution graphics.

There are six more to help you set up your Sprites, move them about the screen and expand them both horizontally and vertically. Everything about this package is extremely well done; the software itself works, the examples given are very helpful and all the commands are sufficiently explained. Considering the price of this package, it is quite excellent.

When looking for a Basic Extender, we all have different requirements and different amounts of money to spend, but I will say that, whether you need something as comprehensive as Breden's Basic or whether you have set your sights on one of the more modest offerings, each of the three packages looked at here is worthy of a place on your short-list. ■

REAL ARCADE ACTION! FROM JETSOFT

Cavelon II
Can you destroy the wicked wizard of castle Cavelon? Only after negotiating the six levels in his castle. Collect all the door pieces before you can attain the next level. Help is at hand in this all thrills, all action, real arcade game, when excalibur appears, achieve indestructability.

Quari
27 levels of increasingly difficult real arcade action. Based on the game Bongo, you must avoid the chasing dinosaur, pterodactyls, falling rocks, native spears and bouncing Bongos. Negotiate rope bridges and erupting volcanoes, picking up the treasures of a lost civilisation as you go – and finally cage the dinosaur – if you can!

BMX STUNTS
BMX STUNTS Based on the original arcade game this action packed game challenges your skill over six tests, straight race, wheelie, ramp jump, slalom, bunny hops and the ultimate test over a V.W. beetle in the Beetle ride.

the arcade people JetSoft

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Imitate the tiger

David Fox looks at the hardware which lets your computer capture images like that of the feline above — graphics tablets and light pens

THERE ARE lots of graphics software packages for the 64 and Vic which enable you to achieve satisfying results with the high-res multi-colour facilities of the machines. October's issues looked at many of these programs, and future articles will cover the latest graphics software. In this article we're more concerned with the hardware, which is becoming cheaper and easier to use all the time.

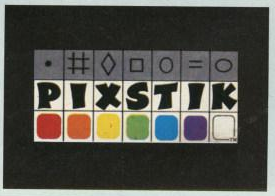
Just as an artist has his palette, the computer graphics programmer must sometimes feel the need for a solid surface on which to work, rather than the usual cursor keys or joystick, which give little feeling of "painting" on a 2-dimensional surface.

Until recently the only other option was the lightpen, and we'll be looking at one of these inexpensive, simple units, the **PixStik** from CBS. First, though, two graphics "tablets"; the **Touchmaster**, and Audiogenic's **Koalapad**.

Touchmaster

Although graphics tablets have been in use for many years in various CAD (computer aided design) applications, it's only recently that the technology has become cheap enough, and the user base wide enough, for it to be practical to design units intended for home computers. The latest on the market is the Touchmaster, which is produced by a company set up by ex-employees of Dragon Data, manufacturers of the Dragon Computers.

Touchmaster claims to be much more than just a graphics tablet; the advertising pushes it as a revolutionary new way of talking to your computer, avoiding the need to use QWERTY keyboards. Although this approach may be successful with computers like the Apple Macintosh, which uses a "mouse", it hardly seems necessary to simplify even further the playing of games. In any case, Touchmaster comes supplied with a graphics software package, and since the games, educational and other utility "Touchware" packs aren't available yet, let's just consider it as a graphics tablet for the moment.



Brushes

Touchmaster has an A4 size control surface, over which is placed a thin plastic overlay printed with the control areas. The Touchmaster has its own mains adapter, an interface cable to plug into the 64 or Vic 20's user port, a plastic stylus, and comes with a user guide and Touchware catalogue. Once set up, possibly using a disk drive on the computer, the result is a spaghetti-like mess of cables.

Touchmaster also has a foot switch socket and serial port, though these are of no immediate use.

The Multiplant program is loaded from tape or disk, and using the stylus on the overlay you can select all the options which are familiar from various purely software-based graphics packages.

At the top of the screen appear the words BRUSH 0,1,2,3, with a block of colour to the right of each number. Brush 0 is the background colour, while 1 and 3 are high-res brushes which can be used in a variety

of styles; dot, vertical block line, horizontal block line, and right or left diagonal. To change brush type you just press the appropriate box on the overlay with the stylus, and remove the pressure when the style you want is indicated on the screen.

Brush widths can also be selected in stages 1 to 9. There are several powerful shape commands, including two types of Circle, and Polygon using from three to nine sides.

Fill allows you to colour areas bounded by lines, and there are also Line, Dot, Text, Zoom, Erase, Load and Save, and View (to remove the cursor) commands.

Touchmaster is a reasonable product, but wildly overpriced for the market at over £120. Despite claims for the accuracy of the sensitised surface, the cursor movement seemed wobbly and slow. The overlay tends to slip or crumple if too much pressure is applied.

Koalapad

Only if the forthcoming Touchware products show a good deal of originality and novelty will Touchmaster stand a change of dominating the market.

The major rival is the Koalapad, distributed by Audiogenic, which as its name suggests is a small, cuddly graphics tablet.

Koalapad is more like A3 size, and is a handy wedge shape with two chunky control buttons. Recent rewrites to the software, which is currently available on cartridge, disk and cassette (though the cartridge version is to be phased out) have made the Koalapad more happy with the PAL TV system — the original American NTSC-based version would draw ellipses rather than true circles on UK TV's.

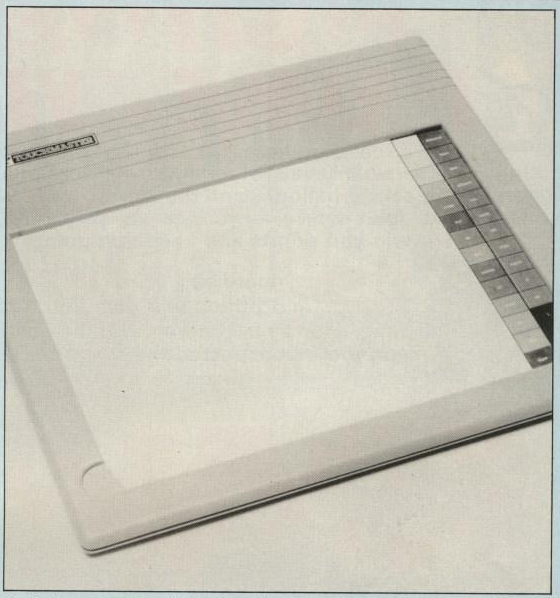
At £79.95, Koalapad is much closer to being a reasonable price for the occasional user. Moreover, the software doesn't suffer at all from not having the Touchmaster's overlay facility; the icon-based command display is easy to follow and makes selection of all the available options easy.

The pressure-sensitive surface of the Koalapad also seems to give quick and steady cursor movement, and connection is simple since no separate power supply is needed and the pad plugs into Port 1 on the 64. Once the command display is loaded, positioning the cursor in the DRAW box and pressing a control button gets you into draw mode. Move the cursor off the bottom of the screen and the screen blanks. You can then draw by pressing down a button and moving the cursor on the pad surface. Release the button and the drawing will stop.

Attractive

The menu consists of Command, Brush and Colour Palette sections. Commands include Circle, Line, Disc, Box and Frame, all of which have a Transport feature which allows part of a design to be moved to any part of the drawing screen.

There are eight different brush shapes, and 16 "patterns" in which you can paint as well as the usual 16 colours. There are also Mirror, Ray, Zoom, Fill, Erase, Copy and Ray commands, and even a Swap facility which makes it possible to take shapes from one screen, "A", and transfer them to another, "B".



The Touchmaster graphics tablet — advanced but overpriced?

Obviously there are also a full range of Save and Load commands, so your masterpieces can be kept for posterity.

Also included in the latest Koalapad packages will be a Koalaprinter utility, which enables graphics to be hard-copied with a suitable dot-matrix printer.

Overall Koalapad is an attractive, efficient, fun product at a reasonable price. Educational and games software packages are promised, and since Audiogenic intends to manufacture the software itself in future there should be no supply problems. Highly recommended.

Budget

For the budget end of the graphics market, the PixStik has been relaunched, this time by CBS. All software will be available on tape, in line with the budget price-range of light pens, and both 64 and Vic 20 versions will be available.

Light pens work by interpreting the screen raster position by calculating the elapsed time between the start of the scan and receiving the light signal. As you'd imagine, this method doesn't lend itself to great precision, and all light pens therefore tend to give wobbly results.

PixStik, which plugs into the joystick port, comes with a graphics program, Paintbox, and four games which are of more value in demonstrating how the light-pen works than they are as entertainment.

The Paintbox program has a brush, colour and command menu display at the top of the screen, and XY coordinates for the crosshair position. The rest of the screen is a blank drawing surface.

The left hand shift key is used to action a command once the right box is selected with the crosshair sight. You have to move fairly slowly for the crosshair to keep up with the lightpen, which is the main disadvantage of the system. However, the range of commands is good, with background, line, rectangle, fill, circle and clear commands as well as a variety of brushes.

Uniquely, the Paintbox software features an Animate routine by which four images can be displayed in sequence to give a cartoon effect.

The PixStik manual is unusually comprehensive, including worked examples of drawing and animation (a house with smoke coming from the chimney) and details of how to use the lightpen in your own programs. On balance, although a lightpen is not such a satisfying graphics aid as a tablet, considering the pricetag, which is under £30, it's certainly an option worth consideration by the impoverished computer artist.

For further details of these products, contact Touchmaster, PO Box 3, Port Talbot, West Glamorgan, 0656-74470; Audiogenic, 39 Suttons Industrial Park, London Road, Reading, Berkshire, 0734-664646; CBS Computer Software, Ashbrook House, 3-5 Rathbone Place, London, 01-969 3277. ■

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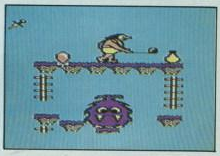

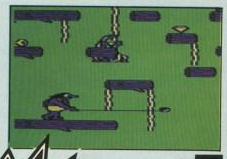

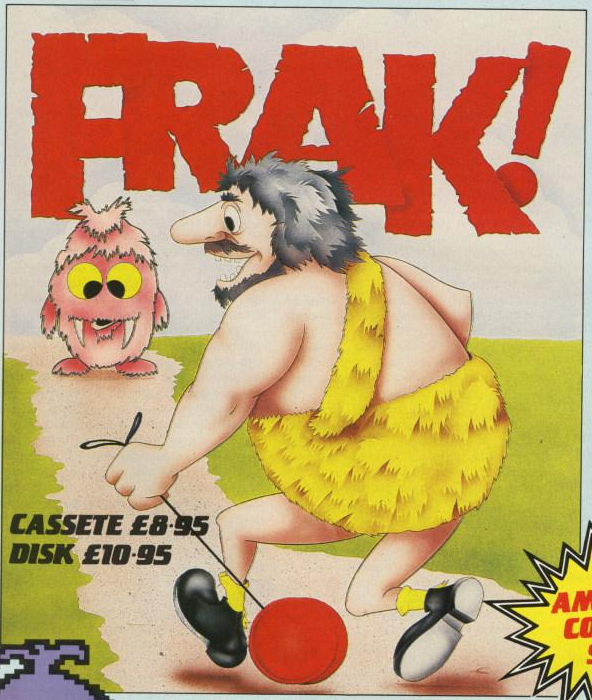

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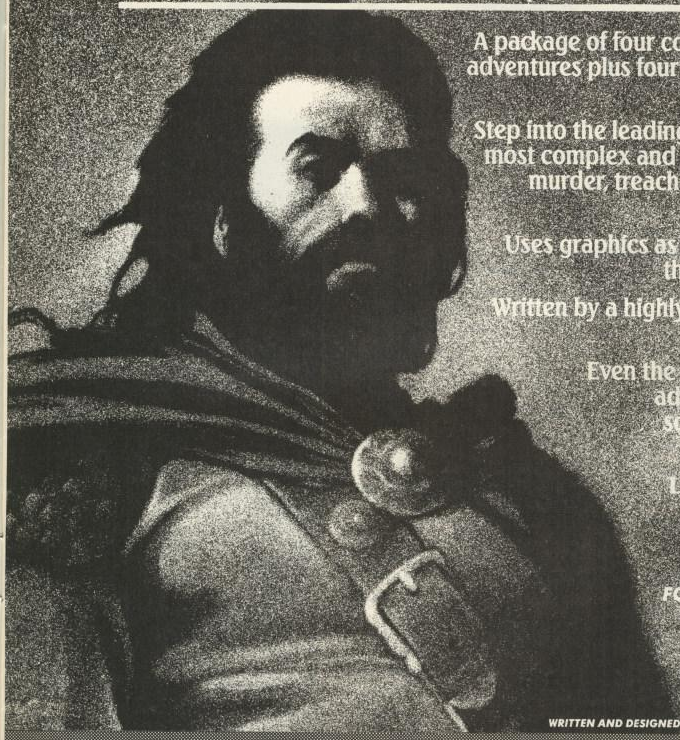

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64 star game: Jeff Mi

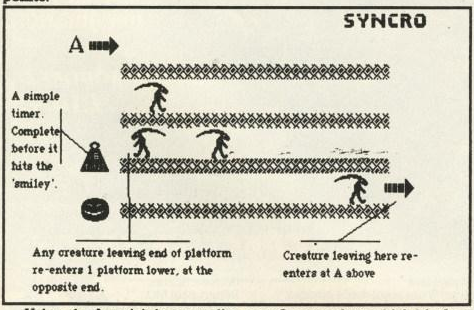
SYNCRO: a Game of Skill by Jeff Minter

1) A Brief Description of the Game.

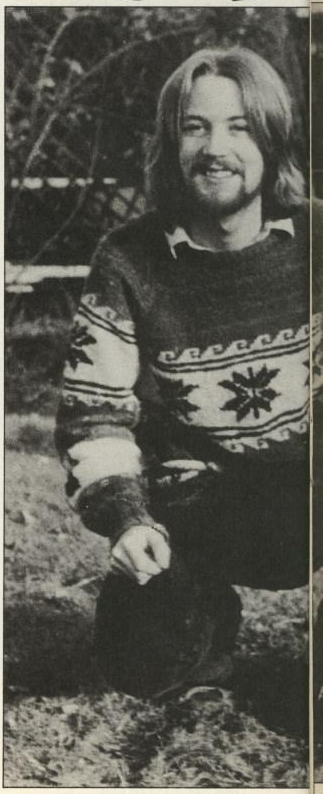
SYNCRO is a test both of manual dexterity and quick thinking. You control the motion of a set of four conveyor belts. Along these belts are several Ancipital creatures. Each is running with a different velocity. Your aim is to manipulate the conveyor belts in such a way as to leave all the Ancipitals 'running on the spot', each on a different belt. Moreover, you must do this so that each Ancipital comes to rest in a certain spot on each conveyor belt, the 'Syncro Zone'. Once all four Ancipitals are static and within their Syncro Zone, you have completed that level; bonus points are awarded depending on how long you took, and the game proceeds to the next difficulty level.

2) A Look at the Screen Layout

The following diagram should help to indicate some of the game's vital points:


SYNCRO
A
A simple timer. Complete before it hits the 'smiley'.
Any creature leaving end of platform re-enters 1 platform lower, at the opposite end.
Creature leaving here re-enters at A above

Using the joystick in controller port 2, you select which platform you want control of by moving the stick up and down (the selected platform pulsates). Once a platform is selected, its speed is controlled by left/right motions of the joystick. By varying the platform's speed, taking into



inter's Syncro

FEW GAMES PLAYERS will need an introduction to Jeff Minter and **Llamasoft.** Since the earliest releases, Jeff's games have had a reputation for brilliant programming, manic invention and exceptional playability. Most have been influenced by the running theme of hairy animals — **Mutant Camels, Sheep in Space,** and **Ancipital,** to name a few.

Now Yak the Hairy has written a 64 game specially for Commodore Horizons. It features the Ancipitals we all know and love, and presents the greatest challenge you'll ever have faced on your 64! The machine code program has been converted into Basic data statements by Kevin Bergin. When typing in the listing, which incorporates a checksum routine to minimise errors, follow the instructions in the introductory REM statements then carry on entering the rest of the program.

For a copy of the newsletter Nature of the Beast, send an s.a.e. to Llamasoft, 49 Mount Pleasant, Tadley, Hants, RG26 6BN.

Turn to page 42 for SYNCOR

account the Ancipitals' own velocities, you can control the positions and speeds of any creatures on your platform.

When an Ancipital is at 'syncro zone', it will begin to pulsate. Get the beast static in the syncro zone, then move on to the next platform. The syncro zones can be in any position on the platforms. Keep an eye on the Ancipitals passing through; you'll see them flash as they pass the Zone.

Any Ancipital going off the end of a platform re-enters on the platform lower down, at the opposite end to the one it left. Beasts leaving the bottom platform re-enter at the top. Once all four Ancipitals are stationary within Syncro Zones, that round is complete.

There are complications, however. The Platforms have a tendancy to slow down. When they start to do this, any ancipitals will, of course, begin to lose station. On the higher levels of the game it is necessary to constantly tend to already-placed creatures when they start to drift.

You are also up against a time limit. If you don't achieve syncro before the 16-ton weight hits the smiley face, the game is over. The weight is reset at the start of each new round.

You may also press the 'syncro button'. When pressed, it sets the speed of the current platform to exactly the opposite of the first Ancipital it locates on the platform. The effect is to halt that Ancipital. It's useful if you need to position an ancipital quickly in the syncro zone; just press the button as it passes through. You can even use it on an already-static Ancipital if you think that the platform is just about to slow down. Pressing the button re-energises the platform.

Take care with this control, though: you are only allowed 9 presses per round, and if there is more than one Ancipital on the current platform when you press, you may find that the platform matches the velocity of the wrong Ancipital!

The game has 10 levels. Each level consists of 4 rounds. Levels get successively harder in that the tendency for the platforms to slow down increases. You'll need to use the syncro button more often, and be quicker in your manipulation of the Ancipitals or they'll soon drift off station.

You'll probably find that it'll take a little time to get used to the game because the concept is not one you're used to (no straightforward Up, Down, Left, Right, Fire!). The game is all the more enjoyable for its originality, and there's a nice bit of boogie woogie music in there to add to the enjoyment.

My best score to date is about 6500 odd, and I got to round 2, level 5. Good luck!

Computerama 64

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10 REM *** A JEFF MINTER PRODUCTION ***
20 REM *** DATA CREATED COURTESY OF KEV
IN BERGIN **
30 REM *** BEFORE ENTERING THIS PROGRAM
 ENTER THE FOLLOWING ***
40 REM *** IN DIRECT MODE: ***
50 REM *** POKE 43,1:POKE 44,64:POKE 16
384,0:CLR:NEW ***
60 POKE53280,2:POKE53281,7:PRINT"■■■■■■
■■■■■■
```

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1210 DATA169,240,157,245,10,208,12,201
1220 DATA0,208,8,32,228,11,169,80
1230 DATA157,245,10,222,171,11,240,1
1240 DATA96,189,1,11,72,41,128,240
1250 DATA7,104,73,255,24,105,1,72
1260 DATA104,41,7,73,7,24,105,1
1270 DATA157,171,11,254,175,11,189,175
1280 DATA11,201,196,208,5,169,192,157
1290 DATA175,11,189,175,11,157,248,7
1300 DATA189,1,11,41,128,240,1,96
1310 DATA189,175,11,24,105,4,157,248
1320 DATA7,96,6,4,1,2,193,193
1330 DATA194,193,189,70,8,240,13,41
1340 DATA128,208,6,222,70,8,222,70
1350 DATA8,254,70,8,96,222,220,11
1360 DATA208,250,169,255,157,220,11,222
1370 DATA224,11,208,240,169,5,157,224
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3850 DATA224,63,143,224,28,1,192,24
3860 DATA112,192,12,249,128,3,254,0
3870 DATA0,112,0,158
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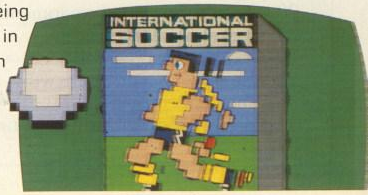

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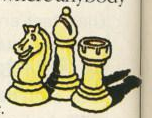
50. Play games, like chess.
51. All this is available now. Let's see what you could look forward to in the future.

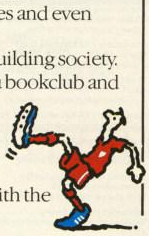


52. Look up travel timetables, for land, sea and air.

53. Find out what's showing at your local cinema.
54. Book seats for a night at the theatre, opera or ballet.
55. Have a flutter on the horses.
56. Order your groceries and have them delivered.
57. Make a computer date in complete privacy.
58. Put your finger on a video.

s will welcome Compunet different reasons.

59. Look into what's new in photography.
60. Request an insurance quotation.
61. Check out your bank account.
62. Ask for a bank loan.
63. Choose a restaurant.
64. Discover a new diet plan.
65. Rustle up a recipe.
66. Book a holiday with a major tour operator.
67. Reserve rooms in hotels all over the world.
68. Put your finger on a jeweller.
69. Plan an extension, fitted kitchen, or remodel your bathroom.
70. Seek advice on sowing seasons from expert gardeners.
71. Unearth a garden centre.
72. Dig up a builder, or builders merchant.
73. View a new home.
74. Arrange your mortgage.
75. Hire a car, for business or pleasure.
76. Ask for DIY advice from a professional.
77. Ferret out plant hire companies.
78. Get a quote for double glazing.
79. Find a squash court, keep fit class or gymnasium.
80. Restock your wine cellar, with reputable vintages or promising nouveaus.
81. Send flowers, chocolates and even champagne.
82. Deposit money with a building society.
83. Become a member of a bookclub and enjoy generous discounts.
84. Discover who your favourite soccer team is playing.
85. Track down sporting events.
86. Make a shrewd investment with the help of a stockbroker.



87. Link up with a legal eagle.
88. Find a new job, or advertise a vacancy.
89. Look up currency exchange rates.
90. Shop around for the best store prices.
91. Enter big exciting competitions to win massive prizes.
92. See what a recognised astrologer reads into your future.
93. Take part in multi-user adventures.
94. Uncover fresh customers to expand your business.
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The rules of Conway's castle

At last, a Commodore adventure column. Dungeon mistress ***Barbara "The Barbarian" Conway*** *sets the scene . . .*

WHEN IT COMES to computer gaming, enthusiasts tend to divide into two camps — the shoot-'em-ups and the adventurers. There is, admittedly, some degree of overlap between the factions but, for the most part, devotees of rapid-fire arcade games tend to prefer to exercise their reflexes, whilst adventure addicts stretch their brains. After which high-biased opinion, you won't have much difficulty guessing that my own inclination is very much more towards a knotty quest than notching up 120,000 points on "Alien Splat".

Unfortunately we seekers after adventure have not, up to quite recently, been all that well catered for on the Commodore front. The best games available have tended to be arcades, using the machine's formidable sound and graphics facilities, apart from a few excellent (and prohibitively expensive) adventure games from the likes of **Infocom** across the Atlantic. Now, however, thanks to a few outstanding UK software houses and at least one remarkable utility for would-be gameswriters, that has changed dramatically.

Logical

Offerings from two of those notable software houses, **Level 9 Computing** and **Melbourne House,** are amongst this month's reviews, but before I get onto them, lets take a quick look at the vexed question of what makes a good adventure. That is, of course, a highly individual judgement. But, since this individual is doing the judging, you might as well know what her prejudices are to start with.

Rule One, which must NEVER be broken, is simple: All good adventures must be logical. That doesn't mean that elements such as magic can't be used. It just lays down that, given an environment whether of time-travel, space exploration, necromancy or whatever, it must always be possible to think your way through a situation once you understand where you are. Thus a game which, say, faces you with a dinosaur and expects you to guess that the way to escape is to turn three somersaults and stick out your tongue is not being logical. On the other hand the solution to getting a warm coat in a **Level 9** adventure, frightening a woolly mammoth with a mouse so that it jumps out of its skin and runs away, is logical. Silly, but logical.

Which brings me to Rule Two: A good adventure should show imagination and a sense of humour. The number of "adventure" games which consist of just trudging around a plotline killing trolls, picking up gold and rescuing the odd damsel in distress is legion. They tend to be just about as much fun as doing the washing-up. It is possible to inject some bezazz into a classic "dungeons and dragons"-type story (the original mainframe Adventure had plenty of whimsical touches) but a distressing number of those on offer just don't seem to think it necessary to do much more than "Go North", "Climb Tree" etc, throwing in a fight or two in a vain attempt to liven things up (or kill things off).

Rule Three may look like a subset of Rule One: Adventurers should not be able to rely on dumb luck. Thus a game, such as **The Valley,** in which combat with nasties is frequent and the outcome depends entirely on random chance, is regarded with suspicion. Fighting is acceptable, although some superb adventures manage without quite nicely, but the adventurer should have to rely on judgement to some extent, even if only in choosing which weapon to wield, how to fight or an option to talk his/her way out.

Damsels

Rule Four is obviously partisan where I am concerned: Adventures should damn well not assume automaticaly that the adventurer is male. I resent having to rescue damsels so often. Why can't I have the option of coming to the assistance of a good-looking fellah occasionally?

Lastly, Rule Five concerns screen lay-out: A text adventure should use good contrasting background and character colours, while a graphics adventure should give the option to turn off the pictures. However good the story, if the text is difficult to read then after a time it's a choice between giving up or risking a splitting headache. And, where graphics are concerned, you can go off pretty pictures, however well drawn, if you keep on having to wait for the same elaborate scene to fill the screen. And some, I regret to say, are not even that pretty and take far too long to appear anyway.

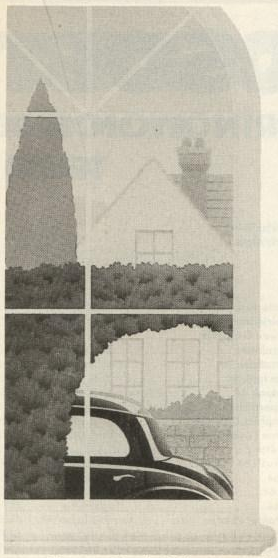
You may notice that the five rules don't specify a complex parsing program (ie a language interpreter which can cope with multiple instructions) since it is possible to have quite reasonable adventures even using the standard two word "verb followed by noun" format. But it's nice to have a good parser, and I have never understood the reason for programs that force you to guess which instructions they will accept. If the inherent vocabulary is very large, then players can still be given a basic list of acceptable commands to get them started.

Sherlock

When it comes to large vocabularies and intricate parsers, **Melbourne House** adventures have very few rivals. Melbourne, it was, which started a new trend in illustrated adventures with its classic **The Hobbit,** and the latest epic from this source can only help to enhance its reputation. **Sherlock,** based on a hitherto untold mystery investigated by the famous detective, features graphics, sound effects, and "character independence" which goes considerably further than the way Thorin used to sit down and sing on no provocation in **The Hobbit.**

You start off in the parlour of 221b Baker Street and, since the adventure is set in real-time, with an on-screen clock, you'll need to do a bit of exploring of your own premises before the faithful Watson, who is naturally there too, gives you the spur to action. Commands can be complex, using the Melbourne house "Inglish" language, which can come in handy as the moments tick away.

Time really is of the essence. On my first few attempts, when I eventually got to the scene of the dastardly crime (or, to be more accurate, crimes, since so far I've come



across three murders including my own) that ignorant flatfoot Inspector Lestrade had arrested the wrong person and refused to listen to reason. One of the joys of Inglish is that, with people less obtuse than Lestrade, you can discuss events, ask questions or even get them to do things for you. Of course Watson, dear devoted old buffer that he is, doesn't show much independent intelligence, but then he wouldn't would he? He does, however, come in very handy for carrying things and once you've said "follow me" to him, he sticks with you.

Victorian

It's terrific fun, the graphics are rapidly-drawn in a small window and can be switched off, and there are some very fetching sound-effects which add to an admirable sense of the Victorian period, steam trains, hansom cabs and all. But, although programmer Philip Mitchell and his team have done an admirable job, there are still plenty of irritating (and a few glorious) bugs. Worst of these is the fact that, so massive is the program, there was no room for a routine to explain that you are carrying too much to take anything else. Thus it is perfectly possible to see a pistol in a room, try to take it, and be told that there is no pistol there! And I resented being told, when I went into the library and tried to look at the books "I see no bookcase". Also, although you can save a game to tape (there is a print-out facility on the Spectrum but not for the CBM 64) once you "quit" you have to reload the cassette to start another game.

But don't let that put you off, the program as a whole is a treat. I haven't unravelled the whole mystery yet, and at the moment I'm lurking, disguised as a China-man, outside a house in Leatherhead, while Watson is following a principal suspect for me. I may let you know more about developments anon but, in the meantime, investigate for yourselves. After all, my dear chap, you know my methods . . .

It turns out that **Melbourne House** is spoiling us rotten this winter. Not only do we get the mystery and suspense of **Sherlock,** but they also provide us with the considerably more rarified, but no less intrigue-ridden, atmosphere of **Hampstead.** This adventure, incidentally, is in clear breach of Rule Four, since the aim of the game is to become a "Hampstead Man", and the entire game is as male-chauvinist as they come. Alas, it's also wickedly funny and highly original. No dragons here (unless you count the marauding gangs of traffic wardens) but the spectre of social disgrace is every bit as terrifying as the prospect of battle with a troll.

Devious

The opening scenes are distinctly reminiscent of **Urban Upstart** and your very first action, as you find yourself in the depressing lounge of your dingy flat with a television showing "3-2-1" in the corner, should indicate how likely you are to "attain" Hampstead. It's not just a matter of finding it, that's a cinch. But before you are accepted there you must have clawed your way up the social ladder, progressing from a pathetic start (and be VERY careful at the beginning or you'll wind up with a criminal record before you've even got going) as dole-queue fodder, through various stages of increasing smartness and deviousness. Final success finds you fitting naturally into Hampstead life as a dedicated Guardian crossword-solver, jogger and Verdi-lover with three children at least, one of whom is called Tarquin.

This is text-only, and fairly simple "verb-noun" text at that, but you can do a lot with it. Locations vary from your flat (and remember that once you've left it you can't return there) through the seedier parts of North-West London to the West End, and thence, if you play your cards right and don't get caught in a highly risky mano-euvre, via the corridors of power to the Ultimate Goal, Hampstead itself. This game obeys its own obnoxious logic totally as far as I have been able to get and, as a one-time resident of Hamp-stead, I can only say that if authors Trevor Lever and Peter Jones show their faces near the top of Rosslyn Hill, some indig-nant citizen is likely to set his matching Afghan Hounds on them, and quite right too.

Hampstead, incidentally, is one of many adventures to be written with the aid of **Gilsoft's** excellent **Quill** program, a utility which takes much of the technical graft out of putting together a text-only game and lets the writer concentrate on producing an imaginative plot.

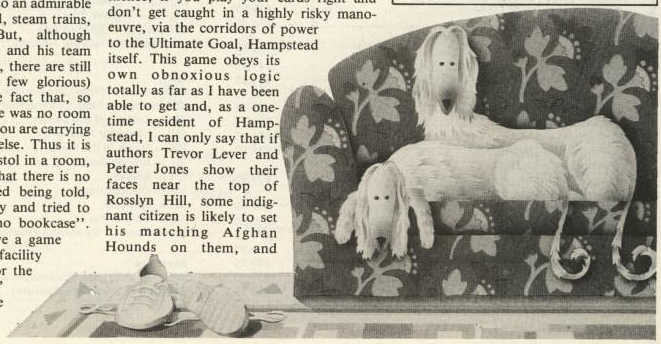
Imagination has never been a problem for the **Level 9 Computing** team. **Return to Eden,** the second in that company's **Snow-ball** trilogy, adds graphics to the surrealist text for the first time. The plot has you, agent Kim Kimberley, struggling both to save yourself from unjust execution after being framed for a terrible crime, and fight-ing massive, and often bizarre, odds to rehabilitate the robot-dominated City of Enoch on the planet of Eden and save your own civilisation.

Parrots

Before you get anywhere near the city you'll face (if you survive) perils ranging from a kleptomaniac parrot through a riddling golem to the dreaded nudibots (no, don't ask) and if you actually make it into Enoch you may find that the political-type skills you acquired in **Hampstead** come in very handy. Every puzzle on Eden has a solution, but lateral thinking is very much the name of the game. If you're desperate **Level 9** will supply a comprehensive clue-sheet.

The command format is basically verb-noun but the vocabulary is massive. Once into the game you'll be hooked, but **Level 9** has made an uncharacteristic blunder at the start. Without a great deal of blind luck you'll certainly be fried by the engines of the vengeful starship almost immediately so I have no compunction in telling you the following: Once you've left the crashed glider then go "E DIG D D D D E S WAIT". Now you're on your own.

*Barbara will be running a mini help service for the **truly** desperate who have got stuck in an adventure. Write to Tower of Adventure at Commodore Horizons, 12/13 Little Newport Street, London, and she'll try to deal with popular problems through the column. Sorry, but we cannot enter into individual correspondence.*



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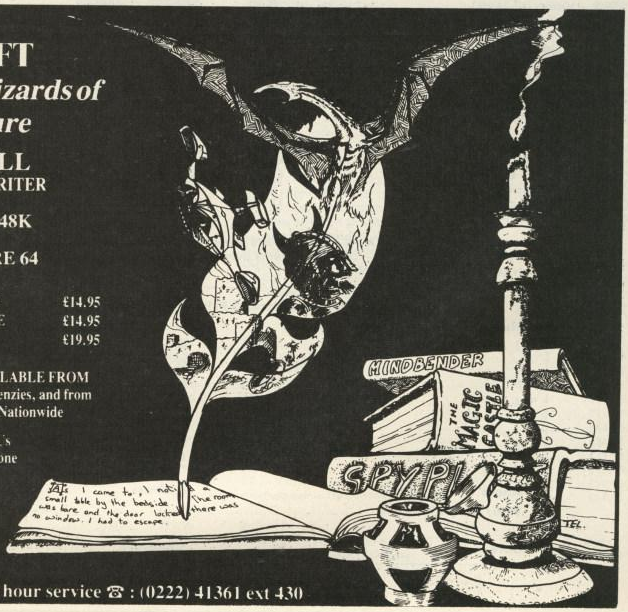

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Graphs and the C16

***David Lawrence** continues last month's look at programming Commodore's new micro*

Lines 3110-3130: Since there can be up to three banks, there need to be up to three names for the horizintal axis, eg sale price, cost, profit. Note that the names have to be put into the array NV$ (*N*ame of *V*ertical) from element zero. This array is not dimensioned in the initialisation routine because it will only ever have three elements. Simply mentioning the array name in the program, automatically sets up the array with 10 elements (0-9).

Lines 3150-3230: The user is requested to input, for each bank, the data for the number of columns specified. The number input is checked to ensure that it will not move the graph above the 19 unit mark. The purpose of the loop at 3165-3210 is to ensure that no figure is entered which would require a graph taller than 19 character squares on the screen.

Testing

Enter the following lines (eventually some will become part of the control module for the program):

```
1030 GOSUB 2000
1040 GOSUB 3000
1090 SCNCLR:END
```

Now RUN the program you have entered so far and answer its questions as follows:

```
For the number represented by each vertical unit: 1
Columns: 1
Banks: 1
Name for horizontal axis: HORIZONTAL
Name for vertical axis 1: VERTICAL 1
Bank 1, value 1: 10
```

After the entry of the last figure, the screen will clear and the program stop with the message READY. Now enter:

```
?,UV,ND,NB,NH$,NV$(0),HH(0,1)
```

and the result should be:

```
1 1 1 HORIZONTAL VERTICAL 1 10
```

You can, if you wish, RUN the program again and try entering false values. You should not be able to enter any column value which is more than 19 times the value of a single unit on the vertical axis.

Like the line graph, Module 2.3.3 needs a framework to be drawn before the information it presents becomes meaningful. The task is accomplished by the present module, which uses loop variables and the CHAR command to position low resolution characters at the correct positions on the screen.

Commentary

Lines 4050-4070: This loop prints a line of 30 inverse brown spaces to provide the base on which the graph will stand. The graphic character is obtained on the * key.

Line 4080: A line across the top of the screen, consisting of the graphic character on the P key 30 times.

Lines 4100-4110: The vertical lines at each end of the graph, marked for each unit. Graphic characters are on L and P keys.

Lines 4130-4150: Four lines across the graph representing units of five on the vertical axis. **Line 4160:** The horizontal axis label.

Lines 4170-4220: These loops print the name(s) for the vertical axis down the right hand side of the screen, together with the value which each unit represents. Note the use of MID$ to extract a single character from CO$ and print it, thus changing the colour of what is printed. The colour of each title will correspond to the colour of one of the banks. Using CO$ in this way allows us to specify any sequence of colours easily — simply alter the control characters in the string.

Line 4230: This line marks the left hand vertical axis using only cursor control characters rather than a loop and CHAR.

Testing

Enter one more line:

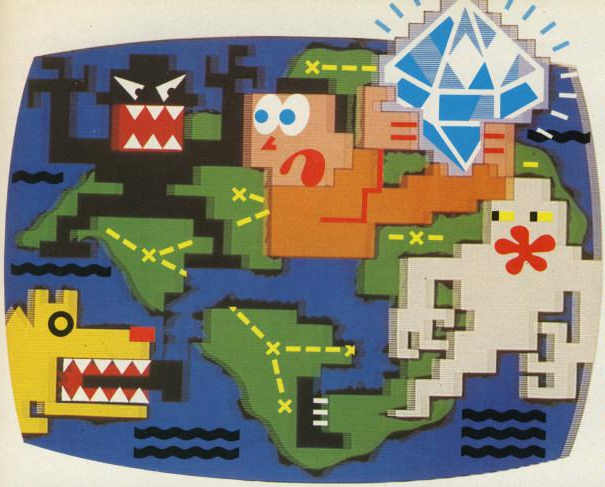
```
1050 GOSUB 4000
```

and now RUN the program. Specify the unit value, one column and three banks. Give the three names for the vertical axis. When asked to specify the value of the columns, you need only press RETURN. You should then see the graph framework displayed, with the horizontal axis name at the bottom and the vertical axis names printed at the top right.

Module 2.3.4 draws the graph. This is a module which is, frankly, easier to understand once it has been entered and you can see its effect. The module is based not so much on broad principles but on the results of experimentation to see which combinations of characters, printed in which positions, provided the desired effect.

```
3000 REM*******************************
3010 REM ACCEPT DATA
3020 REM*******************************
3030 SCNCLR
3040 CHAR,16,1,"[RVS ON][RED]GRAPH" : PRINT
3050 PRINT "[CD][BLK]THERE▽ARE▽19▽UNITS▽VERTI
CALLY."
3060 INPUT "[CD][BLU]NUMBER▽REPRESENTED▽BY▽EA
CH▽UNIT:";UV
3070 INPUT "[CD]COLUMNS▽(1-6):";ND
3080 INPUT "[CD]BANKS▽(1-3):";NB
3090 PRINT "[CD]▽*******************************
**********▽"
3100 INPUT "[CD][RED]NAME▽FOR▽HORIZONTAL▽AXIS
";NH$
3110 FOR I=0 TO NB-1
3120 PRINT "[GRN]NAME▽FOR▽VERTICAL▽AXIS";I+1;
:INPUT NV$(I)
3130 NEXT I
3140 SCNCLR
3150 FOR I=0 TO NB-1
3160 FOR J=1 TO ND
3165 T=20*UV : DO UNTIL T/UV<=19
3170 PRINT "[CD]INPUT▽BANK";I+1;"▽VALUE";J;":
";
3180 INPUT T
3200 IF INT(T/UV)>19 THEN PRINT "[CD]VALUETOO
▽HIGH."
3210 LOOP
3220 HH(I,J)=T
3230 NEXT J,I
3240 RETURN
```

```
4000 REM**********************************
4010 REM DRAW FRAMEWORK
4020 REM**********************************
4030 COLOR 0,1
4040 SCNCLR
4050 FOR I=0 TO 3
4060 CHAR,5+I,20+I,"[BRN]¶RVS ON]¶¶¶¶¶¶¶¶¶¶
¶¶¶¶¶¶¶¶¶¶
```



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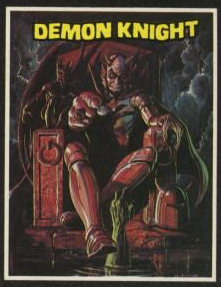

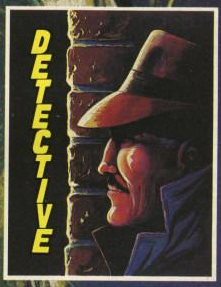

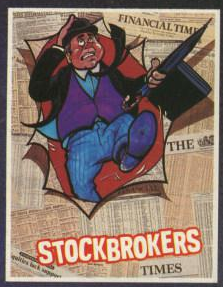

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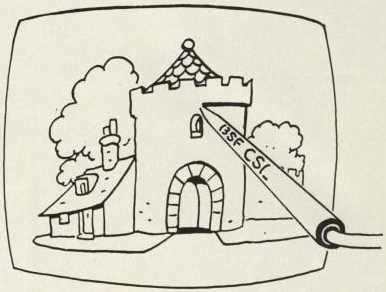

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Compunet is up and running — but at what cost to the user?

A first impression of Commodore's network system by ***John Cochrane*** *— can you afford to join Compunet? Or can you afford not to?*

COMMODORE'S new Compunet system is now on line, and the first users are finding their way around the service. Owners of the 64 can, for £100, get a Compunet modem and one year's subscription to allow them to make full use of the facilities. Added bonuses designed to get the ball rolling have included free software and free mail service within Compunet, competitions, and free facilities to leave messages and programs in the public user area. By the time that you read this however some of these offers will have ended. The free software includes Viewdata for Prestel. Commodore claims that their Compunet modem can be used to give full access to Prestel and Micronet, although you will have to pay additional subscription charges for these.

Telephone

But what is Compunet and what does it do? Essentially it is a telephone-based communications system which allows a Commodore 64 to be used to talk to a central mainframe computer, and access some of the facilities of that computer. Those facilities presently consist of a store of software, both commercial and DIY, either free or on credit; information on a range of topics available as screens of text; blank screens on which you can leave messages for others; and private messaging. The system is a commercial one, that is, it is set up to make money and many of the services must be paid for. You are allocated a £50 credit limit when you register as a user, but the service could cost you many times this amount if you are not careful. Commodore has however tried to cater for many tastes and budgets by setting up a number of alternative services with different charge rates. Commercial software can be bought and immediately transferred to your own machine, although you may need to leave the Compunet modem attached to your machine in order to run the software once you have bought it. A section called The Jungle is a relatively low-cost service which can, to a limited degree, provide a bulletin board with messages and answers on any topic. There are educational services, and so on.

"The structure of Compunet is based on pages of text..."

The hardware for the 64 (hardware for other micros to follow) consists of a black box which plugs into the cartridge port and has a 3m cable ending in a series 600 telephone plug, so you must have one of the new-style phone sockets to use the modem. If you want to use the modem for talking to another 64 then you will need a double socket or a special convertor so that you can use your ordinary phone at the same time. Inside the modem are two circuit boards, one to control the phone signals and to provide the auto-dial hardware, and the other holds the built-in ROM and hardware to communicate with the 64. In principle, it should be possible to use the modem as a general-purpose device, to talk to existing phone-in services. Additional software is required for this and you will be restricted to 1200 baud services.

The structure of Compunet is based on the idea of pages of text (called frames), much the same as those provided by Teletext. The frames are numbered and are used as directories to further information or to the other Compunet facilities. For example, Frame 1 gives you the main menu. It tells you that Frame 100 will tell you more about Compunet, 200 is for micros and software, 300 is the shopping centre, 400 is money matters, and so on. If you select Frame 100 then you are shown a further directory, Frame 110 for information on how to register on Compunet, 120 is a user guide, 140 information on the Compunet Courier service (sending messages) — you get the idea. Each directory gives you more information on a given topic until you reach a specialised frame which offers the final product. The final product may be a document of several frames which is transferred to your machine and held in memory, you can look at each frame as you wish and save the whole document to tape or disk for looking at later. Most of the help and guide information is available in this manner. Some of these documents may be only available at a price, in order to receive them you must be properly registered and must agree the price before seeing what it is that you are purchasing.

Commercial

There are several forms of software available. Commercial software from Commodore and other software houses can be bought at special rates and home-grown software can be bought and sold. Again, you don't know what you are getting until you have paid for it. Compunet is trying to ensure that the software sold gives value for money by threatening to excommunicate anyone caught abusing the service, and by giving buyers a chance to vote on the software which has just been bought. These votes are added and displayed for all to see — high votes should mean that the software

has proved popular with previous buyers. You can only vote if you buy the software and you have only one vote per software item. The problem here is that, at present, Compunet does not tell you how many people in total have bought the software. Thus you can not know what proportion of buyers have been pleased with their purchases. Perhaps the system will be changed though. Compunet is asking for suggestions for additional services and improvements to those existing.

Software is available under several headings, including educational and business software. Compunet is keen to build up both these potential links and is attempting to set up additional services to support such things as business-information services, estate-agent facilities, and software for use in schools and beyond.

MUD

Another form of software available on Compunet, and this may become some people's main reason for getting the thing, is software which loads and runs immediately. There are two examples of how this works. When you first log in some software is automatically loaded into your machine to make sure that you can make full use of all the latest facilities. Thus, there should be little chance of your hardware going out of date. The second example is a program called MUD (Multi-User Dungeon), developed at the University of Essex. This is a sophisticated adventure-type program which takes the whole thing a stage further by allowing up to 32 people to access the thing at the same time. Not only do you have the opportunity to roam around a weird land, finding treasures, fighting beasts, flailing swords about the place, but you also stand a good chance of meeting another player.

All this happens while you are still connected through Compunet.

Other services provided by Compunet include public and private message sending, and classified advertising. The private message sending is achieved by letting you leave a message, in the form of your own home-made frames, with a named recipient. Only the person that you have named can read the message, just like sending a message through the post. Compunet even calls the process of naming the recipient (can be more than one if you want) "creating an envelope". Public messages can be left in a number of ways. If you have some comment to make or a problem you can set up a message and leave it for all to see. If you come back to the system some time later perhaps someone else will have read your message and replied. A special reduced-sized messaging service lets you enter personal adverts — you know the kind of thing, "bicycle wanted in exchange for disk drive".

So, all in all, how does the service shape up and how much does it cost? Currently there is a strong commercial influence, which hopefully will become less noticeable as more users start to make their own contributions through bulletins and so on. Compunet has allowed for many types of user, with many types of requirement. After the first couple of sessions most users will probably find the sections which most interest them and stick to these. There are opportunities to request changes to, or additions to, facilities provided so the system should grow. One aspect which I personally do not like at all is the way that everything has been given a humorous name. The open area is called The Jungle. There is a sort of horizontal menu at the bottom of the screen which allows you to select your choice; this is known as a Duckshoot — it took me about four hours to work out what a Duckshoot was. This particular type of commercial razamataz does not help in getting to understand the system.

Complex

As regards costs, "complex" is the word which springs to mind. Most things cost something; software is simple in that the price is displayed before you buy. Connection charges vary with time of day, zero charge at night, £7.00 per hour during the day (plus £2.50 per hour any time if you want 1200/1200 comms.). Charges for leaving messages or programs are typically 1p per frame (or per 1K program) per day. Program or message sales cost 40 to 50 per cent of the asking price. So try and work that lot out if you can — my only advice is to think before you commit yourself. It may become a good system, but Commodore intends to make money out of it, and we all know the level of turnover the company is used to.□

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Finding a new home for your machine code

Useful routines for relocating machine code will ease the transition from Basic. ***M C Hart*** *explains*

AFTER PROGRAMMERS have made the transition to machine-code, one question when planning a program is 'Where shall I locate the code?' One favoured location is the cassette buffer (locations 828-1019 on the C-64 and VIC) whilst another on the C-64 is the area from location $C000-$CFFF (49152-53247 decimal). Sometimes, though, you may need to have two machine code routines in memory at the same time and if they were both written to occupy the same space then one of them will need to be relocated.

If the program consists entirely of relative branches such as BEQ +02 or of absolute jumps, then no problems will occur. Other types of code do not relocate so easily, however. If you have written some code which contains references to sub-routines within itself, then these sub-routine calls will not transfer over without amendment as they refer to absolute addresses in RAM. In such cases, it would be useful to have a routine which computes the new routine location before the data is POKE'd into position. This is called a RELOCATING LOADER and one is presented here which is suitable for any CBM machine.

The principle behind a relocating loader

HEXIT listing

```
1 FOR J=828TO931:READX:POKEJ,X:NEXT
2 END
10 DATA 32,115,0,201,36,208,42,32
11 DATA 82,3,72,32,82,3,170,104
12 ::DATA 32,205,189,76,116,164,32,97
13 ::REM VIC 32,205,221,76,116,196,32,97
14 ::REM B2  32,217,220,76,137,195,32,97
15 ::REM B4  32,131,207,76,255,179,32,97
16 :
17 DATA 3,10,10,10,10,133,35,32
18 DATA 97,3,101,35,96,32,115,0
19 DATA 201,58,41,15,144,2,105,8
20 ::DATA 96,32,138,173,32,247,183,170
21 ::REM VIC 96,32,138,205,32,247,215,170
22 ::REM B2  96,32,139,204,32,210,214,170
23 ::REM B4  96,32,132,189,32,45,201,170
24 :
25 DATA 152,72,72,138,72,72,169,36
26 DATA 32,210,255,104,32,144,3,104
27 DATA 32,149,3,104,32,144,3,104
28 DATA 32,149,3,96,24,106,106,106
29 DATA 106,41,15,24,105,48,201,58
30 DATA 144,2,105,6,32,210,255,96
31 :
32 REM FOR PETS (B2 & B4) MAKE 115 IN
33 REM LINES 10,18 INTO 112
34 :
```

is essentially quite simple. If we know that the location of a sub-routine is 20 bytes on from the start of the program, then the location of the subroutine should remain 20 bytes on from the start of the program whereever it happens to be located. All thgat we have to do is to identify the relevent subroutine calls, substitute some code which contains the offset from the start of memory and then compute and POKE in the new low and high addresses of the subroutine.

The routine HEXIT provides a hexadecimal calculator, so the demonstration routine is actually useful. To use it, one merely types:

SYS Location,$----

or

SYS Location,----

If the first character is a $ sign then the number will be converted to decimal. If there is no $ sign then the number is assumed to be decimal and will be converted to its hexadecimal equivalent. This is a bonus, for the real purpose of the article is really to demonstrate how relocating loaders actually work. If you like, you can use a slightly different syntax — making the variable DEC into START+7 and the variable HEX into START+49, one can then say SYS(DEC)$---- or SYS(HEX)----. Note the *absence* of a comma in this case.

Relocate

If you study the disassembly of HEXIT, then you will notice that the eight pairs of bytes that are underlined are references to sub-routines contained within the body of the code. There are actually four sub-routines each of which is called twice. The firsr routine is $0352 and, counting from zero, this is located 22 bytes from the start of the program.

Similarly, subroutine $0361 is located 37 bytes from the start, subroutine $0390,84 bytes from the start and subroutine $0395,89 bytes from the start.

Once we have computed (manually!) the offset from the start of the program, then everytime reference is made to a subroutine that we desire to relocate we replace the low byte of the subroutine call with the offset expressed as a NEGATIVE number. For example, if you study the HEXIT+RELOCATE BASIC loader, then you will see that if the first subroutine call comes right at the beginning of the second line. Therefore we replace the low byte of (decimal) 82 with +22 and repeat the same procedure whenever necessary throughout the program.

When the relocating loader HEXIT+RELOCATE is actually run, then the bytes of the subroutine calls that we need to recompute are indicated by being negative numbers. Notice that the variable S holds the new start location of the code and any positive integer is POKED straight into memory. If a negative number is indicated then line 3 is activated. This ADDS the offset onto the new start location (S minus a negative number equals $ plus that number!) Y is the low byte of the new subroutine call and this is POKED in after computation. The high byte is computed and the data pointer moved on by a READ Z and the loop variable incremented by a J=J+1. The high byte is then POKEd in by the normal operation of line 4. Notice that although only one value is inserted into the code, (i.e. the negative value of the offset) two new values are generated from this, the low and high bytes of the computed sub-routine location.

Obviously, in this approach one has to have a variable holding the value of the start (S in this case) and it is probably convenient to have a value specifying the total number of bytes in the program (N). In order to relocate the code, all that is needed is to put the desired location for the start of the code into the variable S in line 1.

A relocating loader like the one just described makes one's routines much more versatile. Just remember that one has to start counting the bytes from 0 at the start of the program, and all of your programs should relocate without difficulty.

The HEXIT loader is set up, by default, for a Commodore 64. As there are calls into ROM, the routine will need adapting for other machines. This is quite easy to do. In place of line 12 (tagged by the double colon ::) put the relevent line for the VIC, PET BASIC 2 or PET BASIC 4. Do likewise for line 20.

In addition, PET owners (B2 and B4) should ensure that the value of 115 in lines 10,18 reads 112. ■

HEXIT + Relocate listing

```
1 S=49152:N=104
2 FORJ=S TO-S+N-1:READ X:IF X>=0THEN 4
3 X=S-X:Y=X-INT(X/256)*256:POKE J,Y:X=X/256:
   J=J+1:READ Z
4 POKE J,X:NEXT
10 DATA 32,115,0,201,36,208,42,32
11 DATA -22,3,72,32,-22,3,170,104
12 DATA 32,205,189,76,116,164,32,-37
13 DATA 3,10,10,10,10,133,35,32
14 DATA -37,3,101,35,96,32,115,0
15 DATA 201,58,41,15,144,2,105,8
16 DATA 96,32,138,173,32,247,183,170
17 DATA 152,72,72,138,72,72,169,36
18 DATA 32,210,255,104,32,-84,3,104
19 DATA 32,-89,3,104,32,-84,3,104
20 DATA 32,-89,3,96,24,106,106,106
21 DATA 106,41,15,24,105,48,201,58
22 DATA 144,2,105,6,32,210,255,96
```

Turn to page 66 for the HEXIT disassembly.

HEXIT disassembly

```
033C 20 73 00    JSR $0073
033F C9 24       CMP #$24
0341 D0 2A       BNE $036D
0343 20 52 03    JSR $0352   ; Replace with low/high
0346 48          PHA           bytes of (START + 22)
0347 20 52 03    JSR $0352   ; Replace with low/high
034A AA          TAX           bytes of (START + 22)
034B 68          PLA
034C 20 CD BD    JSR $BDCD
034F 4C 74 A4    JMP $A474
0352 20 61 03    JSR $0361   ; Replace with low/high
0355 0A          ASL           bytes of (START + 37)
0356 0A          ASL
0357 0A          ASL
0358 0A          ASL
0359 85 23       STA $23
035B 20 61 03    JSR $0361   ; Replace with low/high
035E 65 23       ADC $23       bytes of (START + 37)
0360 60          RTS
0361 20 73 00    JSR $0073
0364 C9 3A       CMP #$3A
0366 29 0F       AND #$0F
0368 90 02       BCC $036C
036A 69 08       ADC #$08
036C 60          RTS
036D 20 8A AD    JSR $AD8A
0370 20 F7 B7    JSR $B7F7
0373 AA          TAX
0374 98          TYA
0375 48          PHA
0376 48          PHA
0377 8A          TXA
0378 48          PHA
0379 48          PHA
037A A9 24       LDA #$24
037C 20 D2 FF    JSR $FFD2
037F 68          PLA
0380 20 90 03    JSR $0390   ; Replace with low/high
0383 68          PLA           bytes of (START + 84)
0384 20 95 03    JSR $0395   ; Replace with low/high
0387 68          PLA           bytes of (START + 89)
0388 20 90 03    JSR $0390   ; Replace with low/high
038B 68          PLA           bytes of (START + 84)
038C 20 95 03    JSR $0395   ; Replace with low/high
038F 60          RTS           bytes of (START + 89)
0390 18          CLC
0391 6A          ROR
0392 6A          ROR
0393 6A          ROR
0394 6A          ROR
0395 29 0F       AND #$0F
0397 18          CLC
0398 69 30       ADC #$30
039A C9 3A       CMP #$3A
039C 90 02       BCC $03A0
039E 69 06       ADC #$06
03A0 20 D2 FF    JSR $FFD2
03A3 60          RTS
```

COMMODORE SOFTWARE FILE

Disassembler

Mark Thomson from Bedford sends this program for the 64 or Vic

THIS IS A simple disassembler for the Vic or 64. It will disassemble any section of memory and list it in standard 6502 mnemonic form. The workhorse loop of the program, lines 140 to 220, has been kept as short as possible, so there is no error handling.

The start address specified for disassembling must always contain a valid mnemonic op-code, never an address or an operand, or you will get 'out of data eror in 150'. The listing can be sent to screen or printer.

On running, you will be prompted for a filename. This is optional. Second, select the desired output device number. Third, type H or D for hex or decimal mode. Finally, enter start and end addresses of the routine to be disassembled (4-bit hex or decimal according to mode).

The program works by works peeking the address in 'A' then searching the data queue for the op-code of the same value. The memory location address is then converted into hex if necessary and displayed, along with the mnemonic read into the data queue into MS. The third value read from the data queue is N, which denotes addressing mode. This value points into the appropriate subroutine which calculates the operand and address and returns it in OPS which is then printed.

The address counter then has N added to it to point the next op-mode.

Use the disassembler to study the ROM subroutines in your machine — for example for keywords such as LOAD. The Programmers Reference Guide contains a comprehensive memory map.

```
1 REM**********************************
2 REM**********************************
3 REM****......DISSASSEMBLER......****
4 REM****.....      BY       .....****
5 REM****.....  MARK THOMSON.....****
6 REM**********************************
7 REM**********************************
10 INPUT"[CLR][RVS]FILENAME[OFF]";F$
20 INPUT"[DOWN][RVS]OUTPUT DEVICE NO.[OFF]";D
30 F$=F$+CHR$(13)+CHR$(10)+CHR$(10)
40 OPEN5,D,0,F$
50 INPUT"[DOWN][RVS]SELECT HEX OR DECIMAL(H OR D)[OFF]";K$
60 IFK$<>"H"ANDK$<>"D"THEN50
70 IFK$="H"THENMODE=0
80 IFK$="D"THENMODE=1
90 INPUT"[DOWN][RVS]START ADDRESS[OFF]";SA$
100 INPUT"[DOWN][RVS]END ADDRESS[OFF]";EA$
110 ONMODE+1GOSUB20070,20080
120 IFSA>=EATHENPRINT"[DOWN]ADDRESS ERROR":FORDE=0TO2000:NEXT:GOTO90
130 PRINT"[CLR]";:A=SA
140 P=PEEK(A)
150 READC,M$,N:IFC<>PTHEN150
160 RESTORE:ONMODE+1GOSUB20020,20030:REM HEX,DEC ADDRESS DECODE
170 PRINT#5,A$,M$;" ";:IFMODE=0ANDN<>1THENPRINT#5,"$";:REM $ SHOWS
HEX NOS.
180 ONNGOSUB20040,20050,20060:REM CALCULATE OPERAND
190 PRINT#5,OP$
200 A=A+N:REM BUMP ADDRESS COUNTER TO NEXT MNEMONIC
210 IFA>EATHENPRINT#5:CLOSE5:END
220 GOTO140
20000 REM HEX-DEC S/R PASS HD$,GET HD
20001 HD=16*(ASC(HD$)-48+(ASC(HD$)>64)*7):HD$=RIGHT$(HD$,1)
20002 HD=HD+ASC(HD$)-48+(ASC(HD$)>64)*7
20003 RETURN
20010 REM DEC-HEX S/R PASS DH,GET DH$
20011 DH$=CHR$(INT(DH/16)-(INT(DH/16)>9)*7+48):DH=DH-INT(DH/16)*16
20012 DH$=DH$+CHR$(DH-(DH>9)*7+48)
20013 RETURN
```

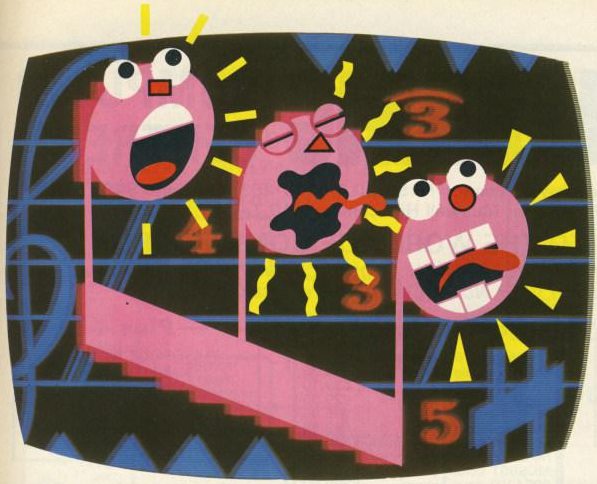
```
20020 REM ADDRESS DECODE (HEX) S/R
20021 DH=INT(A/256):GOSUB20010:REM CONVERT HIGH NYBBLE
20022 A$=DH$:DH=A-INT(A/256)*256:GOSUB20010:REM CONVERT LOW NYBBLE
20023 A$=A$+DH$:RETURN
20030 REM ADDRESS DECODE (DEC) S/R
20031 A$=RIGHT$(STR$(A),LEN(STR$(A))-1):RETURN
20040 REM IMPLIED ADDRESSING (NO OPERAND) S/R
20041 OP$="":RETURN
20050 REM 1-BYTE OPERAND S/R
20051 IFMODE=1THENOP$=RIGHT$(STR$(PEEK(A+1)),LEN(STR$(PEEK(A+1)))-1):RETURN
20052 DH=PEEK(A+1):GOSUB20010:OP$=DH$:RETURN
20060 REM 2-BYTE OPERAND S/R
20061 IFMO=1THENT=PEEK(A+2)*256+PEEK(A+1):OP$=RIGHT$(STR$(T),LEN(STR$(T))-1):RETURN
20062 DH=PEEK(A+2):GOSUB20010:OP$=DH$:DH=PEEK(A+1):GOSUB20010:OP$=OP$+DH$:RETURN
20070 REM CALCULATE PROGRAM START AND END ADDRESSES (HEX) S/R
20071 HD$=LEFT$(SA$,2):GOSUB20000:SA=HD*256
20072 HD$=RIGHT$(SA$,2):GOSUB20000:SA=SA+HD
20073 HD$=LEFT$(EA$,2):GOSUB20000:EA=HD*256
20074 HD$=RIGHT$(EA$,2):GOSUB20000:EA=EA+HD:RETURN
20080 REM CALCULATE PROGRAM START AND END ADDRESSES (DEC) S/R
20081 SA=VAL(SA$):EA=VAL(EA$):RETURN
30000 DATA 0,BRK,1,1,ORA(I,X),2,5,ORAZ,2,6,ASLZ,2,8,PHP,1,9,ORA#,2,10,ASLA,1
30001 DATA 13,ORA,3,14,ASL,1,16,BPL,2,17,ORA(I),Y,2,21,ORAZ,X,2,22,ASLZ,X,2
30002 DATA 24,CLC,1,25,ORAY,3,29,ORAX,3,30,ASLX,3,32,JSR,3,33,AND(I,X),2
30003 DATA 36,BITZ,2,37,ANDZ,2,38,ROLZ,2,40,PLP,1,41,AND#,2,42,ROLA,1,44,BIT,3
30004 DATA 45,AND,3,46,ROL,3,48,BMI,2,49,AND(I),Y,2,53,ANDZ,X,2,54,ROLZ,X,2
30005 DATA 56,SEC,1,57,ANDY,3,58,CLI,1,61,ANDX,3,62,ROLX,3,64,RTI,1
30006 DATA 65,EOR(I,X),2,69,EORZ,2,70,LSRZ,2,72,PHA,1,73,EOR#,2,74,LSRA,1
30007 DATA 76,JMP,3,77,EOR,3,78,LSR,3,80,BVC,2,81,EOR(I),Y,2,85,EORZ,X,2
30008 DATA 86,LSRZ,X,2,88,CLI,1,89,EORY,3,93,EORX,3,94,LSRX,3,96,RTS,1
30009 DATA 97,ADC(I,X),2,101,ADCZ,2,102,RORZ,2,104,PLA,1,105,ADC#,2,106,RORA,1
30010 DATA 108,JMP(I),3,109,ADC,3,110,ROR,3,112,BVS,2,113,ADC(I),Y,2
30011 DATA 117,ADCZ,X,2,118,RORZ,X,2,120,SEI,1,121,ADCY,3,125,ADCX,3,126,RORX,3
30012 DATA 129,STA(I,X),2,132,STYZ,2,133,STAZ,2,134,STXZ,2,136,DEY,1,138,TXA,1
30013 DATA 140,STY,3,141,STA,3,142,STX,3,144,BCC,2,145,STA(I),Y,2,148,STYZ,X,2
30014 DATA 149,STAZ,X,2,150,STXZ,Y,2,152,TYA,1,153,STAY,3,154,TXS,1,157,STAX,3
30015 DATA 160,LDY#,2,161,LDA(I,X),2,162,LDX#,2,164,LDYZ,2,165,LDAZ,2
30016 DATA 166,LDXZ,2,168,TAY,1,169,LDA#,2,170,TAX,1,172,LDY,3,173,LDA,3
30017 DATA 174,LDX,3,176,BCS,2,177,LDA(I,Y),2,180,LDYZ,X,2,181,LDAZ,X,2
30018 DATA 182,LDXZ,Y,2,184,CLV,1,185,LDAY,3,186,TSX,1,188,LDYX,3,189,LDAX,3
30019 DATA 190,LDXY,3,192,CPY#,2,193,CMP(I),X,2,196,CPYZ,2,197,CMPZ,2
30020 DATA 198,DECZ,2,200,INY,1,201,CMP#,2,202,DEX,1,204,CPY,3,205,CMP,3
30021 DATA 206,DEC,3,208,BNE,2,209,CMP(I),Y,2,213,CMPZ,X,2,214,DECZ,X,2
30022 DATA 216,CLD,1,217,CMPY,3,221,CMPX,3,222,DECX,3,224,CPX#,2,225,SBC(I),X,2
30023 DATA 228,CPXZ,2,229,SBCZ,2,230,INCZ,2,232,INX,1,233,SBC#,2,234,NOP,1
30024 DATA 236,CPX,3,237,SBC,3,238,INC,3,240,BEQ,2,241,SBC(I),Y,2,245,SBCZ,X,2
30025 DATA 246,INCZ,X,2,248,SED,1,249,SBCY,3,253,SBCX,3,254,INCX,3
```

Sprightly

Steve Brown from Langley Mill sends this 64 program

THIS IS A sprite demonstration incorporating animation and joystick control. You'll see a little man on the screen who will walk around under the control of a joystick. Line 20-60 check the edge of the screen for the sprite and sets the correct registers and positions. 70-140 handles movement and sprite selection. 150-200 checks the joystick; 210 POKEs the X and Y values to position the sprite. Line 250 clears the screen, and 260 sets up arrays and variables for sprite images. Lines 270-280 set up the sprite registers, 290 prints a message, 300-310 read sprite image data into memory, 320 reads in image order and puts values in arrays, 330 positions the initial sprite, 490-870 contain sprite image data, and 880-900 give the image order.

```
1 REM WRITTEN BY STEVE BROWN
10 GOTO250
20 IFY=0THENY=255:RETURN:REM CHECK TOP SCREEN
30 IFY=255THENY=0:RETURN:REM CHECK BOTTOM SCREEN
40 IFX=100ANDPEEK(V+16)=1THENPOKEV+16,0:X=0:RETURN:REM CHECK RIGHT
50 IFX=0ANDPEEK(V+16)=0THENPOKEV+16,1:X=100:REM CHECK LEFT
```



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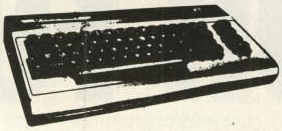

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cass=cassette disk=diskette
R=rom

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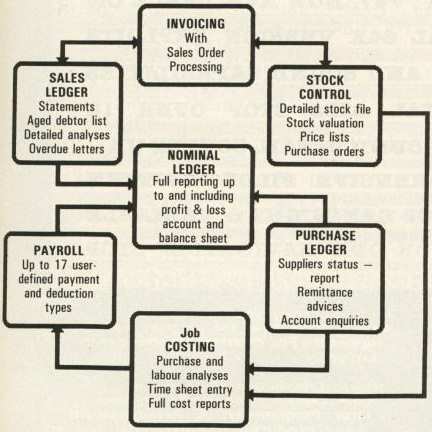

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```
60 RETURN
70 FORJ=0TO4:POKE2040,P+W(J):Y=Y-1:GOSUB20:GOSUB210:NEXTJ
80 FORJ=5TO8:POKE2040,P+W(J):Y=Y-1:GOSUB20:GOSUB210:NEXTJ:RETURN
90 FORJ=9TO13:POKE2040,P+W(J):Y=Y+1:GOSUB20:GOSUB210:NEXTJ
100 FORJ=14TO17:POKE2040,P+W(J):Y=Y+1:GOSUB20:GOSUB210:NEXTJ:RETURN
110 FORJ=18TO24:POKE2040,P+W(J):IFX=0ANDPEEK(V+16)=1THENPOKEV+16,0:X=256
120 X=X-1:GOSUB20:GOSUB210:NEXTJ:RETURN:REM SPRITE LEFT
130 FORJ=25TO31:POKE2040,P+W(J):IFX=255ANDPEEK(V+16)=0THENPOKEV+16,1:X=-1
140 X=X+1:GOSUB20:GOSUB210:NEXTJ:RETURN:REM SPRITE RIGHT
150 B=NOTPEEK(56320)AND15:REM JOYSTICK CHECKING ROUTINE
160 IF(BAND1)THENGOSUB70
170 IF(BAND2)THENGOSUB90
180 IF(BAND4)THENGOSUB110
190 IF(BAND8)THENGOSUB130
200 GOTO150
210 POKEV,X:POKEV+1,Y:RETURN:REM POSITION SPRITE
250 PRINT"■":REM CLEAR SCREEN
260 V=53248:X=150:Y=150:DIMW(35):REM SET UP VARIABLES AND ARRAYS
270 POKEV+21,1:POKEV+32,7:POKEV+33,1:POKEV+39,12:POKEV+28,0:POKEV+22,0
280 POKEV+23,1:POKEV+29,1:POKE2040,199:REM SET UP SPRITE
290 P=192:PRINTCHR$(14)"■■■
```

```
680 DATA0,126,0,0,102,0,0,66,0,0,90,0,0,126,0,0,24,0,0,126,0
685 DATA0,126,0,0,126,0,0,126,0,0,60,0,0,60,0,0,36,0,0,36,0
690 DATA0,4,0,0,4,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
695 REM LEFT IMAGE 1
700 DATA0,126,0,1,254,0,0,94,0,0,134,0,0,102,0,0,24,0,0,60,0
705 DATA0,124,0,0,190,0,1,61,0,2,60,128,0,60,0,0,102,0,0,195,0
710 DATA1,129,128,7,3,128,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
715 REM IMAGE 2
720 DATA0,126,0,1,254,0,0,94,0,0,134,0,0,102,0,0,24,0,0,60,0
725 DATA0,60,0,0,124,0,0,190,0,1,61,0,0,60,0,0,102,0,0,198,0
730 DATA0,195,0,1,199,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
735 REM IMAGE 3
740 DATA0,126,0,1,254,0,0,94,0,0,134,0,0,102,0,0,24,0,0,60,0
745 DATA0,60,0,0,60,0,0,124,0,0,190,0,0,60,0,0,24,0,0,60,0
750 DATA0,60,0,0,124,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
755 REM IMAGE 4
760 DATA0,126,0,1,254,0,0,94,0,0,134,0,0,102,0,0,24,0,0,60,0
765 DATA0,60,0,0,60,0,0,60,0,0,60,0,0,60,0,0,24,0,0,24,0
770 DATA0,24,0,0,56,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
795 REM RIGHT IMAGE 1
800 DATA0,126,0,0,127,128,0,122,0,0,97,0,0,102,0,0,24,0,0,60,0
805 DATA0,62,0,0,125,0,0,188,128,1,60,64,0,60,0,0,102,0,0,195,0
810 DATA1,129,128,1,192,224,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
815 REM IMAGE 2
820 DATA0,126,0,0,127,128,0,122,0,0,97,0,0,102,0,0,24,0,0,60,0
825 DATA0,60,0,0,62,0,0,125,0,0,188,128,0,60,0,0,102,0,0,99,0
830 DATA0,195,0,0,227,128,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
835 REM IMAGE 3
840 DATA0,126,0,0,127,128,0,122,0,0,97,0,0,102,0,0,24,0,0,60,0
845 DATA0,60,0,0,60,0,0,62,0,0,125,0,0,60,0,0,24,0,0,60,0
850 DATA0,60,0,0,62,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
855 REM IMAGE 4
860 DATA0,126,0,0,127,128,0,122,0,0,97,0,0,102,0,0,24,0,0,60,0
865 DATA0,60,0,0,60,0,0,60,0,0,60,0,0,60,0,0,24,0,0,24,0
870 DATA0,24,0,0,28,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
880 REM IMAGE ORDER
890 DATA2,3,4,3,2,1,0,1,2,7,8,9,8,7,6,5,6,7,13,12,11,10,11,12,13
900 DATA17,16,15,14,15,16,17
```

Breakthrough

This Vic game comes from James Stopps of Hinton Waldrist (?!)

BREAKTHROUGH is a version of the old favourite Breakout for the unexpanded Vic. In this version you get an extra life, one hundred points, and a faster ball every time you break through the wall. The higher the bricks, the more points you score. You start with seven lives, and if you beat the high score you hear a tune and you can input your name.

```
0 POKE36865,175:POKE36879,14:PRINT"■□□□□□□□□□▶▶▶▶▶BREAK THROUGH"
1 PRINT"▶▶▶▶▶┌──────────▶▶▶▶▶▶▶▶▶▶BY J.STOPPS■■■■■■■■■■■┌──────■■■■■■■■■■
■";
2 PRINT"HIT A KEY■■■■■■■■■┌──────────"
3 FORT=150TO38STEP-1:POKE36865,T:NEXT
4 IFPEEK(197)=64THEN4
5 POKE649,0:POKE649,1
6 PRINT"□■INSTRUCTIONS(Y/N)":INPUTA$:IFMID$(A$,1,1)="Y"THENGOSUB2000:G$=""
9 PRINTCHR$(8):V=0:L=7:I=36875:O=7680:J=22:K=40
10 POKE650,128:POKE649,1:PRINT"□";:A$="■□■■■■■■■":POKE36878,15
20 FORA=1TO6
30 PRINTMID$(A$,A,1)"■                                    ■";:NEXTA
50 H=1:X=11:Y=20:A=8152:C=X:D=Y
60 R=INT(RND(1)*3+1)
65 GOTO140
70 P=O+(J*Y)+X:POKEO+(J*D)+C,32
75 IFPEEK(P)>90THEN280
80 POKEP,81:C=X:D=Y
```

```
90 Q=PEEK(197):IFQ=64THEN143
100 Z=A:IFQ=33THENA=A-1:IFA<8142THENA=8142
110 IFQ=30THENA=A+1:IFA>8162THENA=8162
140 POKEZ,32:POKEZ+1,32:POKEA,100:POKEA+1,100:GOTO145
143 FORT=1TOK:NEXT
145 IFR>3THENY=Y+1:GOTO164
147 Y=Y-1
150 IFR=1THENX=X-1:IFX=0THENR=3:GOTO70
160 IFR=3THENX=X+1:IFX=21THENR=1
163 GOTO70
164 IFR=4THENX=X-1:IFX=0THENX=X-1:R=6
165 IFR=6THENX=X+1:IFX=21THENR=4
170 IFY>JTHEN330
180 GOTO70
280 IFY<0THEN1000
281 GOTO350
282 IFX>20THENX=21:R=4:GOTO4000
283 IFX<1THENX=0:R=6:GOTO4000
284 IFPEEK(P)=100THENPOKEI,135:FORRT=1TO100:NEXT:R=INT(RND(1)*3+1)
285 IFPEEK(P)=100THENPOKEI,0:GOTO140
290 POKEI+1,135:FORT=1TO100:NEXT:R=INT(RND(1)*3+4):POKEI+1,0
295 POKEP,32
310 GOTO140
330 REM ** EXPLOSION
333 L=L-1:FORF=255TO135STEP-1:POKEI+2,F:NEXT:POKEI+2,0:POKEA,32:POKEA+1,32
335 IFL>0THENPOKEO+(J*D)+C,32:GOTO50
336 PRINT"■■■■■■■■■■■■■■■■■■■■";:FORT=1TO9:READA$:PRINTA$;:FORP=1TO250:NEXTP:NEXTT
337 PRINT"■■■■■■■■■■■■■■■■HIT A KEY"
338 IFPEEK(197)<>64THEN338
339 IFPEEK(197)=64THEN339
340 PRINT"□YOU SCORED";V"POINTS":IFV>HSTHENPRINT"■■   A NEW HIGH SCORE ■":GOSU
B3000
345 RESTORE:PRINT"■HIGH SCORE■":PRINTHS;N$:INPUT"■ANOTHERGO";G$:IFMID$(G$,1,1)=
"Y"THEN6
347 END
350 REM ** POINTS
355 IFY=0THENV=V+50
360 IFY=1THENV=V+25
370 IFY=2THENV=V+20
380 IFY=3THENV=V+15
390 IFY=4THENV=V+10
400 IFY=5THENV=V+5
410 GOTO282
1000 REM**BREAKTHROUGH
1005 FORT=135TO255:POKEI+1,T:NEXT:FORT=255TO125STEP-1:POKEI+1,T:NEXT:V=V+100:L=L
+1
1010 PRINT"□BREAK THROUGH!!!!      ONE EXTRA LIFE!!!      100 EXTRA POINTS!  ■P
RESS 'Y'"
1020 IFPEEK(197)<>11THEN1020
1030 K=K-20:GOTO10
2000 REM**INSTRUCTIONS
2005 PRINT"□■■      BREAK THROUGH■■"
2010 PRINT"■IN THIS GAME YOU HAVE TO BREAK THROUGH A    BRICK WALL."
2020 PRINT"POINTS ARE AWARDED AS FOLLOWS:-"
2030 PRINT"■■■      ■■-50":PRINT"■■      ■■-25":PRINT"■■      ■■-20":PRINT"■■   ■
■-15"
2040 PRINT"■■      ■■-10":PRINT"■■      ■■-5":PRINT"■HIT A KEY"
2050 GETA$:IFA$=""THEN2050
2060 PRINT"□■YOU CONTROL A PADDLE  AT THE BOTTOM OF THE  SCREEN."
2070 PRINT"ITS CONTROLS ARE:-":PRINT"■Z-LEFT.":PRINT"/-RIGHT."
2071 PRINT"■YOU START WITH SEVEN  LIVES.■■■■■■■■HIT A KEY"
2072 GETA$:IFA$=""THEN2072
2075 PRINT"□TO BREAK THROUGH THE  WALL YOU HAVE TO:-"
2080 PRINT"■1. KNOCK A HOLE RIGHT THROUGH IT."
2090 PRINT"2. HIT THE BALL IN THEGAP."
2100 PRINT"■THE BALL WILL REBOUND OFF THE WALL AND YOUR PADDLE AT RANDOM  AN
GLES."
2120 PRINT"■IF YOU BREAK THROUGH  YOU WILL GET AN EXTRA LIFE AND 100 POINTS."
```

```
 2210 PRINT"■HIT A KEY TO START"
 2220 GETA$:IFA$=""THEN2220
 2230 GOTO9
 3000 REM ** HI-SCORE
 3005 FORA=1TO6:READB:POKEI+1,B:READC:FORT=1TOC:NEXTT:NEXTA
 3010 PRINT"PLEASE ENTER YOUR NAME":INPUTN$:HS=V:RETURN
 3030 DATAG,A,M,E," ",O,V,E,R
 3040 DATA195,400,175,200,195,200,207,200,215,600,0,0
 4000 IFPEEK(P)=100THENPOKEI,135:FORT=1TO100:NEXT:POKEI,0
 4003 IFPEEK(P)=100ANDR=6THENR=3
 4005 IFPEEK(P)=100ANDR=4THENR=1
 4007 IFPEEK(P)=100THEN140
 4010 POKEI+1,135:FORT=1TO100:NEXT:POKEI+1,0:POKEP,32:GOTO140
```

Space Mines

Kevin Hughes sends this program for the unexpanded Vic 20

LAST MONTH we publisyhed the first section of this program, which gave the instructions and set up the screen.

Here is the conclusion of Space Mines. You guide your ship to a safe landing with a joystick, avoiding the mines. On the way up you can ram them for extra points, and dock with the mother ship. Watch out, though, for the deadly Black Mine.

```
 5 POKE52,27:POKE56,27:POKE51,192:POKE55,192:CLR:PRINT"■"
 6 V2=36875:V=V2+3:V4=V-1:POKEV+1,26:L=5
 7 POKEV,15:Y=22:U=-22:POKE650,128:POKE198,0
 8 D1=37139:D2=37154:RA=37137:RB=37152:POKED1,0:POKED2,127:GOTO500
 50 POKEV2,0:POKEV4,0:POKEV,15:GOTO2000
 60 GOTO3000
 80 GOTO4000
 100 PRINT"■■■
```

```
4010 PRINT"■■■
```

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```
117 IF A=2 AND B=2 THEN 141
118 IF A=2 AND B=3 THEN 142
119 IF A=2 AND B=4 THEN 143
120 IF A=2 AND B=5 THEN 144
121 IF A=3 AND B=1 THEN 145
122 IF A=3 AND B=2 THEN 146
123 IF A=3 AND B=3 THEN 147
124 IF A=3 AND B=4 THEN 148
125 IF A=3 AND B=5 THEN 149
126 IF A=4 AND B=1 THEN 150
127 IF A=4 AND B=2 THEN 151
128 H=30:IF A=4 AND B=3 THEN 152
129 H=45:IF A=4 AND B=4 THEN 153
130 H=60:IF A=4 AND B=5 THEN 154:END
135 FOR C=1 TO 10:A1=INT(RND(0)*26):A2=INT(RND(0)*26):GOTO 160
136 FOR C=1 TO 10:A1=INT(RND(1)*41)+11:A2=INT(RND(1)*41)+11:GOTO 160
137 FOR C=1 TO 10:A1=INT(RND(1)*61)+29:A2=INT(RND(1)*61)+29:GOTO 160
138 FOR C=1 TO 10:A1=INT(RND(1)*151)+59:A2=INT(RND(1)*151)+59:GOTO 160
139 FOR C=1 TO 10:A1=INT(RND(1)*326)+119:A2=INT(RND(1)*326)+119:GOTO 160
140 FOR D=1 TO 10:B1=INT(RND(1)*26)+4:B2=INT(RND(0)*15):GOTO 170
141 FOR D=1 TO 10:B1=INT(RND(1)*46)+24:B2=INT(RND(1)*25)+9:GOTO 170
142 FOR D=1 TO10:B1=INT(RND(1)*71)+49:B2=INT(RND(1)*41)+19:GOTO 170
143 FOR D=1 TO 10:B1=INT(RND(1)*75)+49:B2=INT(RND(1)*56)+29:GOTO 170
144 FOR D=1 TO 10 :B1=INT(RND(1)*151)+89:B2=INT(RND(1)*90)+39:GOTO 170
145 FOR E=1 TO 10: C1=INT(RND(1)*11):C2=INT(RND(0)*11):GOTO180
146 FOR E= 1 TO 10:C1=INT(RND(4)*16):C2=INT(RND(4)*16):GOTO 180
147 FOR E= 1 TO 10:C1=INT(RND(9)*21):C2=INT(RND(9)*21):GOTO 180
148 FOR E=1 TO 10: :C1=INT(RND(1)*26)+15:C2=INT(RND(1)*26)+15:GOTO 180
149 FOR E=1 TO 10:C1 =INT(RND(1)*46)+19:C2=INT(RND(1)*46)+19:GOTO180
150 FOR F=1 TO 10:T=INT(RND(1)*6)+1:P=INT  (RND(2)*15):GOTO 190
151 FOR F=1 TO 10:T=INT(RND(1)*6)+1:P=INT(RND(2)*15):GOTO 190
152 FOR F=1 TO 10:T=INT(RND(1)*10)+4:P=INT(RND(2)*15):GOTO190
153 FOR F=1 TO 10:T=INT(RND(1)*12)+4:P=INT(RND(2)*15):GOTO190
154 FOR F=1 TO 10:T=INT(RND(1)*15)+4:P=INT(RND(2)*15):GOTO 190
155 POKE53281,2:PRINT"■■■
```

```
187 POKE53281,2:PRINT"■■■
```

Win a RAT!

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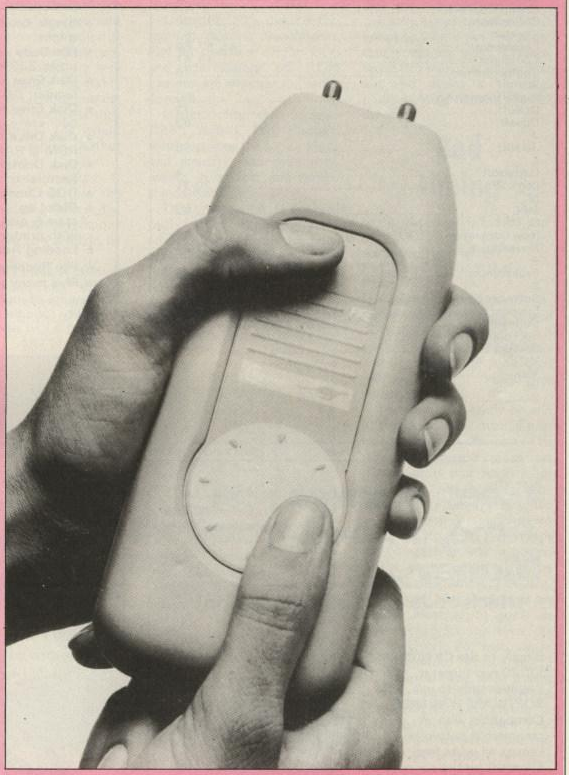
The RAT's infra-red signals are transmitted from the "nose" and picked up by the receiver unit, and cannot interfere with any other remote-control devices such as TVs and videos.

The RAT costs £29.95, but we have eight to give away in this simple competition. As a bonus the winners will receive a copy of Cheetah's new arcade game The Perils of Bear George, in which the valiant bear must collect enough food to survive through the winter, then avoid skiers, crevasses and spiders in his trek to the hibernation cave. Bear George costs £6.95 in the shops.

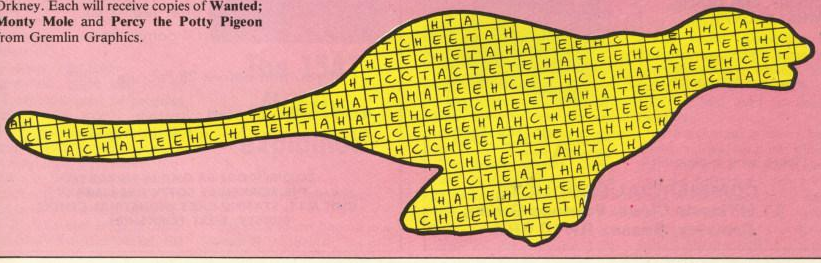


How many spots?

All you have to do to win is to look at the cheetah shown below, and tell us how many times you can spot the word CHEETAH hidden in it. You can read forwards, backwards or diagonally in a straight line. When you've counted up, put the answer on a POSTCARD with your name and address, and complete this tie-breaker in an apt, amusing and original manner in 15 words or less: Cheetah's RAT knocks spots off the competition because . . .

Competition closes on January 31st. Results will be announced in our March issue. Normal competition rules apply. Post your entries to RAT Competition, Commodore Horizons, 12/13 Little Newport Street, London WC2.

The winners of October's Gremlin Graphics competition are: J O Golder of Stafford; C D Turner of Old Windsor; S Adams of York; C Bray of Haywards Heath; G Thomas of Birkenhead; A C Rumsey of Macclesfield; M D Challiner of Stoke-on-Trent; M Breakell of Cleethorpes; N Karmarkar of Purley; W Sinclair of Orkney. Each will receive copies of **Wanted; Monty Mole** and **Percy the Potty Pigeon** from Gremlin Graphics.



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C
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Clowning around

Book: *41½ Fun Projects for your Commodore*
Authors: *Disharoon and Kohl*
Publisher: *Prentice-Hall*
Price: *£6.75*
Reviewer: *Chris Whitcombe*

This book is, I suspect, intended to be read by someone considerably younger than yours truly. Even so, I think that most people, whatever their age, would find it utterly useless. The introduction suggests that, should we be bored with our 64, buying this volume will once more brighten our dull lives. 'You'll be absolutely obsessed' (it says) 'with a Dungeons and Dragons dice rolling program, and you'll probably want to take full advantage of the innovative strategy and music games.' I shall be neither obsessed nor taking advantage. 'Practically speaking . . . a metric converter and a comparison shopping program truly make your life easier.' I can just see all us 64 owners wheeling our pride and joy around the supermarket looking for the best value.

As the book is littered with drawings of a clown (the author perhaps?), I can only assume that it is intended for an extremely young audience. It is an American book that should have stayed on the other side of the pond. Were it to cost £1.75, it just might have appealed to somebody, somewhere; but at £6.75 it is overpriced garbage.

Instant sunshine

Book: *Instant Arcade Games for the Commodore 64*
Author: *Jean Frost*
Publisher: *Pan/PCN*
Price: *£3.95*
Reviewer: *Phil Bonner*

The title might lead you to expect a book of program listings which, strictly speaking, this is not. It is intended for people who are interested in writing their own games programs in Basic, and sets out to teach the inexperienced programmer how this may be done. The aim is to produce either a "Goodies versus the Aliens" type of arcade game or a text adventure.

The arcade section begins by providing a 'skeleton' listing and then gives a choice of routines for putting flesh on the bare bones. These include a variety of sprite designs for both goodies and baddies, and a fairly comprehensive range of simple sound effects. The programs thus produced are well structured, though inevitably they end up as variations on the same theme. Nevertheless they are well conceived and would be sure to inspire further experimentation.

The adventure section is slightly different, in that the listings provided produce just one game, although suggestions are made as to how it might be varied.

Jean Frost's book is unusual and interesting, and should provide both enjoyment and inspiration. It treats the subject simply but thoroughly, and is good value for money at £3.95.

The 1541 finally explained

Book: *Inside Commodore DOS*
Authors: *Richard Immers and Gerald G. Neufeld*
Publisher: *Prentice Hall (UK edition)*
Price: *£19.35*
Reviewer: *Jack Cohen*

This guide to the 1541 is the best reference book I have read since Raeto West's *Programming the PET/CBM*.

Using the DOS, diskette formatting, diskette organization, and an overview of the DOS and commentary on ROM routines are amongst the topics covered.

Other chapters include Direct Access Programming, which explains the use of Block and memory read/write commands in a clear and understandable manner.

DOS protection is covered fairly fully although some advanced protection methods are not mentioned.

Commodore's data encoding scheme is clearly explained, and sector headers are analysed as part of the explanation. DOS error codes and messages are documented and explained in detail.

The most important program listed will allow you to move the 1541's read/write head anywhere you want and read the next header passing over the head.

The screen display shows where the head is, what track and sector was read, and describes any read errors that were encountered.

'Getting out of trouble' is required reading especially if you have ever lost information on a diskette. Program listings are easy to understand, and control characters have been converted to readable form. There are programs to edit a disk and to create errors.

I have typed in several programs and have not found any that would not work. I recommend this book unreservedly to all who desire a thorough understanding of the 1541 disk drive.

Bad timing

Book: *Animation, Games and Sound for the Vic-20*
Author: *Tony Fabbri*
Publisher: *Prentice-Hall*
Price: *TBA*
Reviewer: *David Shepherdson*

This American book is well bound and laid out, but it has come at the wrong time; its best market would have been shortly after the Vic-20 was launched!

The book can really be said to supplement the manual provided with the machine. The program examples given are mainly short and simple, but are very fully and comprehensively explained, even to the extent of noting which keys to use to enter them — perhaps too comprehensively in places, as the explanations are larger than the programs they explain. Also, many of the programs are almost identical to some in earlier chapters, or even the same chapter. For instance, in Chapter Ten, 8 of the 12 programs are the same except that an eight line PRINTed sketch changes (from a Christmas Card to a New Year Card to a Halloween Card and so on). As for colour, no use is made until the 23rd chapter, and the only POKEs used are for sound, and those from the 13th chapter!

The usual Appendix is included, covering Characters and screen/border colours, but the most glaring omission is of UDG's. Not even a single mention.

In conclusion, a flashy but slightly misleading book which may still appeal to you if you find the Reference Guide a bit deep. What more can be said about a book including a program title like "One-Eyed Gorilla Moving Left"?

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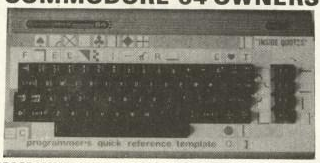

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ANSWER BACK

Data on sprites

I KNOW that I can only display up to eight sprites at a time unless using raster interrupts, but how do I go about storing more than eight blocks of sprite data in memory?
Colin Gordon
Swindon
Wilts

THE EIGHT sprite pointers are normally at location 2040 onwards (that is, the last eight bytes of the 1K screen memory). The range of each pointer is from 0 to 255, and therefore since each sprite takes 64 bytes these locations can point to any part of the 16K bank of memory currently in use by the Vic chip.

If banks 0 or 2 are used then you cannot place sprite definitions in the ROM image of the character set, and this will restrict the number of sprite definitions to 128. If more are needed, up to 160 maximum, then bank 1 or 3 must be used. If using Basic, you will either have to lower the top or raise the bottom of Basic to protect your sprite data. If you move the screen, then the eight sprite pointers will also move, and if you don't use the default character set then one must be provided. The answer to your question, then, is to POKE the sprite pointer bytes with the location in memory of the data to be used. This can be done within a program, for instance 2040 for sprite 0 location. If the data stored at 2040 is 200, then the location of the sprite data is at 200*64=12800 if using bank 0.

By POKEing 2040 with 100, then new data can be accessed at 100*64=6400. So your program will POKE in the new locations as required, and then you can use many sets of eight sprites.

Practicalc advice

I RECENTLY bought a spreadsheet program, Practicalc 64 (disk version). Unfortunately, I just can't get it to work with the Smith-Corona TP-1 printer. I spent hours trying the different setup values, but to no avail. Can you help?
Albert Vun
Wycliffe Hall
Oxford

IF PRACTICORP cannot help, I suggest you try Discom Trading Co of Dresden House, 51 High Street, Evesham, Worcs, who distribute the TP-1 printer.

Out of memory

I HAVE WRITTEN a program approximately 17K long, and tested it successfully. But after running the program for about five minutes I get OUT OF MEMORY errors on various lines. Can you give any assistance?
J H Willis
Cotgrave
Notts

IT IS NOT so much the size of the original program that matters, as the runtime size. It seems as though a large number of variables, strings and arrays are being created when the program is run. Check the amount of memory remaining after getting the OUT OF MEMORY error using the FRE(0) method described in previous issues, and you will find a minus amount of memory available. Large arrays, strings and variables use up a great deal of memory, and the remedy is to cut the number of arrays, possibly reducing the number of players in your game. Do you need to keep all the data throughout the game? If not, then re-use the arrays for later data.

Epson options

I AM THINKING of buying a printer which has to meet certain requirements. The print speed would have to be at least 160 cps, buffer storage, dot matrix, 10 cpi and up to 10 inch paper, tractor and friction feed, capable of printing out hi-res drawings and able to be reeled backwards and forwards by a knob in the side. Can you give me some ideas, what sort of price I would have to pay, and suitable interfaces?
Andrew Winch
Borough Green
Kent

I WOULD RECOMMEND the Epson FX-80 as being closest to your requirements. Optional interfaces are RS232-C and IEEE 488, amongst others, and the standard is the Centronics style 8 bit parallel interface. Print speed is 160 cps, with 2K buffer and hi-res capability. See the printer demonstrated with the software you wish to use before you buy so that you can be certain of compatibility with your programs.

Assembling the Vic

I HAVE HAD a Vic-20 for a few years and wonder if you can give me any advice on books teaching assembly language, with an assembler and disassembler included in the package.
Paul Newman
Colchester
Essex

TRY *Beginners Assembly Language Programming for the Vic 20* by P. Holmes in the Dr Watson series from Honeyfold, Standfast House, Bath Place, High Street, Barnet, London, 01-441 4130. Price is £15 including a cassette which contains an assembler program. The mnemonics used are not standard, but should prove useful.

Many free assembler and disassembler programs can be obtained by joining ICPUG, for instance Vic Micromon, a public domain program.

Anagram of Gemini

I RUN A SMALL mail order business as well as letting property. I have a 64 with disk drive and printer, and need a good user-friendly accounting package with a good manual, which could work on a daily/weekly/ monthly basis and print accounts in sufficient detail to pass muster for VAT and IRS. It would not be necessary for the program to link with Easyscript and Superbase but it would be a bonus.
Christopher Wright
Lytham
Lancashire

TRY GEMINI'S cash book/VAT/final accounts program, or Anagram's, which includes sales, purchase and nominal ledgers. Make sure before you buy that the software fulfils all your accounting requirements. Gemini is at Unit 21, Dinan Way Trading Estate, Devon, Exmouth, 0395-265165, Anagram at 60A, Queen Street, Horsham, West Sussex, 0403-59551.

Clearing sprites

MANY TIMES I have been writing programs on my 64 and found that I'm unable to clear sprites from the screen. Can you explain how to do this?
Martin Huxley
Chalfont St. Giles
Buckinghamshire

USE THE following to turn sprite "S" on and off.
POKE53269,PEEK(53269) OR2*S: to turn on sprite number "S".
POKE53269,PEEK(53269) AND(255-2*S): to turn off sprite.

Cobol questions

I HAVE a Commodore 64 and a 1541 disk drive. Is it possible to get the language COBOL to run on it?

Could you also tell me in what order I should switch on my computer and disk drive; the manual says the computer should be switched on last, while INPUT magazine says it should be switched on first.
V E Brennan
Bromley

YOU'LL need the CP/M cartridge from Commodore to run COBOL, and it's not yet available. The manual is right; computer last.

If you need help with a technical query or problem write to Jack Cohen, Commodore Horizons, 12-13 Little Newport Street, London WC2R 3LD

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I HAVE over 300 programs on disk and tape and wish to swap software and ideas. Please send your list — mine by return. To: A. Beale, Moorlands Cottage, Drumlithie, Kincardineshire, Scotland. All letters answered. CBM 64 only.

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ARE YOU bored with your Vic software? If so, swap it with me. I ahve lots of games to swap. send s.a.e. for details to Mark Ravenhill, 426 Fair Oak Road, Fair Oak, Eastleigh, Hants. SO5 7AD.

CBM 64 software to exchange with other users, please send lists to Neil Reynolds 55 Leam Crescent, Solihull, West Mids B92 8PB.

COMMODORE 64 owners. Let me have your recomendations on good strategy games, will swap info if required — battle strategy preferred (war, sci-fi etc). Steve Christian ''Mossley'' Orient Drive, Liverpool 25.

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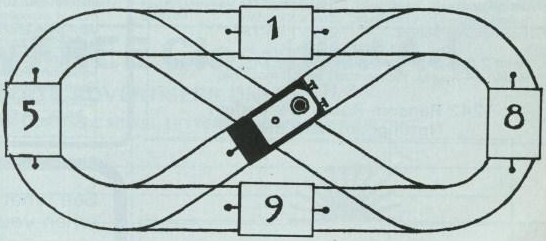
Train layout



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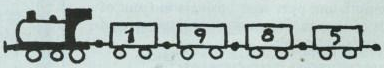

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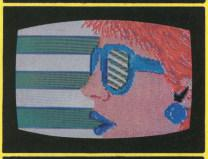

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